Note remarks

: MAC 10,8 d Test sheet : 22.3.90 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 046 701

Injection pump

Pump designation : PES6P110A720RS3019

Governor

: RQV300/600...1050PA Governor design.

293KR

Cust. part no.

Customer-spec. information Customer : MACK

: ENDT 675 C Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 40

Inlet press., bar: 0.21

Openina

pressure, bar : 270...273

: 9 681 230 710 Test Lines

Outside diameter

x Wall thickness

x Length mm : 6.35X1.70X914.40

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

: 3.20...3.30 Prestroke mm

: (3.15...3.35)

Rack travel in mm : 8.95...11.95 : 1-5-3-6-2-4

Firing order

: 0-60-120-180-240-300

Phasing : 0.50 (0.75) Phasing

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 11.95...12.05

Del.quantity cm3/: 14.0...14.2

100 s: (-)

Spread cm3 : 0.4

100 s: (-)

rpm : 300 2nd speed

Rack travel in mm : 5.10...5.30 Del.quantity cm3/: 1.3...2.1 100 s: (-)

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1050 Speed

Rack travel in mm : 15.00...16.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

: 140.0...142.0 Del.quantity

1000 : (138.0...144.0)

RATED SPEED

1st version

Control lever

position degrees: 62...70

Testing:

1st rack travel in: 15.50

rpm : 1040...1060 Speed

2nd rack travel in: 9.10

rpm : 1115...1145 Speed

3rd rack travel in: 0.00...7.50

rpm : 1180 Speed

LOW IDLE 1

Control lever

position degrees: 15...23

Testina:

Speed rpm

Minimum rack trave: 9.80

: 300 Speed rpm

Rack travel in mm : 7.50...8.50

Rack travel in mm : 5.20

Speed rom

: 385...415 : 700 Speed rpm

Maximum rack trave: 2.00 rom

Rack travel in mm : -

TORQUE CONTROL

Torque control curve - 1st version

1st speed

t speed rpm : 1050 Rack travel in m: 11.90...12.00

rpm : 1000 2nd speed

Rack travel in m: 11.95...12.05

rpm : 900 3rd speed

Rack travel in m: 12.00...12.10

rpm : 700 4th speed

Rack travel in m: 12.80...12.90

5th speed rpm : 600

Rack travel in m: 13.40...13.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800 Del.quantity cm3/: 153.0...159.0

1000 s: (151.0...161.0)

Speed : 600 rpm

Del.quantity cm3/: 184.5...188.5 1000 s: (183.0...190.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: ?

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 110.0...170.0 1000 s: (-)

LOW IDLE

Speed rpm : 300 Rack travel in mm : 15.0...23.0

Remarks:

: MACK # 313 CC 5107 P

See VDT-I-MAC 002

PLE dimension = 0.670'' - 0.744''

The test specifications apply to testing of the injection pump assembly with the genuine engine/nozzle-and-holder assembly

Note remarks

: MAC 11.0 n1 : 26.3.90 Test sheet

Edition Replaces

: ISO-4113 Test oil

Combination no. : 0 402 046 715

Injection pump

Pump designation : PES6P110A720RS3024

Governor

: RQV300/600...1050PA Governor design.

350K

Cust. part no.

Customer—spec. information Customer : MACK

: ETA 676 A Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 40...45

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.5

Opening

pressure, bar : 300

Test Lines : 9 681 230 710

Outside diameter x Wall thickness

x Length mm : 6.35X1.70X915.0

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Prestroke mm

: 2.8...2.9 : (2.75...2.95)

Rack travel in mm : 10.50

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance $+ - \circ : 0.50 (0.75)$

BASIC SETTING

rom : 10001st speed

Rack travel in mm : 13.85

Del.quantity cm3/: 17.25...17.45

100 s: (-)

cm3 : 0.4Spread

100 s: (-)

2nd speed rpm : 300 Rack travel in mm : 5.00 Del.quantity cm3/ : 1.5...2.5

100 s: (-)

cm3 : 0.4Spread

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1095

Speed

Rack travel in mm : 16.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

Del.quantity : 172.5...174.5 1000 : (170.0...177.0)

RATED SPEED

1st version Control lever

position degrees: 60.5...65.5

Testing:

1st rack travel in: 12.90

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

Speed rpm : 1190...1220

4th rack travel in: 1290 Speed rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 16...21

Testing:

rpm : 250 Speed Minimum rack trave: 9.8 rpm : 400 Speed

Rack travel in mm : 3.80...5.20 Rack travel in mm : 2.00

: 680...740 Speed rpm

A03

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000 Rack travel in m: 13.85 2nd speed

nd speed rpm : 800 Rack travel in m: 14.10...14.20

: 600 3rd speed rpm

Rack travel in m: 14.75...14.85

rpm : 500 4th speed

Rack travel in m: 14.35...14.45

FUEL DELIVERY CHARACTERISTICS

1st version

Speed : 800 rpm

Del.quantity cm3/: 188.0...194.0 1000 s: (186.0...196.0)

: 600 Speed rpm

Del.quantity cm3/: 218.0...222.0

1000 s: (216.0...224.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.90

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 120...180

1000 s: (-)
Rack travel in mm : 11.90...12.10

HIGH IDLE

1st version

: 1205 Speed rom

Rack travel in mm : 3.90...4.10

LOW IDLE

Speed rpm

Del.quantity cm3/: 15.0...25.0

1000 s: (-)

Remarks:

: MACK # 313 GC 5111 P

: 11

See VDT-I-MAC 002

PLE dimension = 0.740'' - 0.820''

The test specifications apply to testing of the injection-pump assembly with the genuine engine/nozzle-and-holder assembly

Note remarks

: SSC 19,0 a : 16.02.90 Test sheet Edition : 12.82 Replaces

: ISO-4113 Test oil

Combination no. : 0 402 046 729

Injection pump

Pump designation : PES6P130A320LS3091

: 0 412 036 700 EP type number

Governor

Governor design. : RQV300...750PA614 : 0 421 813 316 Governer no.

Customer-spec. information : SSCM Customer

: POYAUD-L685 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm : (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 750 1st speed

Rack travel in mm : 15.00...15.10

Del.quantity cm3/: 40.0...40.3

100 s: (40.0...40.3)

cm3 : 0.6Spread

100 s: (1.0)

rpm : 300.02nd speed Rack travel in mm : 5.7...6.1 Del.quantity cm3/ : 1.7...2.3 100 s: (1.3...2.7)

cm3 : 1.0Spread 100 s: (1.4)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 3001st speed

: 1.30...1.50 travel mm rpm : 600 2nd speed

: 5.30...5.80 travel mm

rpm : 750 3rd speed travel mm : 7.80...8.30

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 790

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 750 Speed

: 400.0...403.0 Del.quantity 1000 : (400.0...403.0)

cm3: 6.00

Spread 1000 : (10.00)

RATED SPEED

1st version

A05

Control lever

position degrees: 62...70

Testing:

1st rack travel in: 14.00

rpm : 790...800 Speed 2nd rack travel in: 4.00

Speed rpm: 850...880 4th rack travel in: 1000

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 7...15

Testing:

Speed rpm: 100 Minimum rack trave: 7.40 rpm : 300 Speed

Rack travel in mm : 5.80...6.00

CONSTANT REGULATION

rpm : 325...435 Speed

START CUT-OUT

1/min: 220 (240) Speed

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 14.00 rpm : 790...800 Speed

Remarks:

APPLICATION

Navy

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Rack travel in mm : 9.00...12.00 Note remarks Firing order : RVI 12,0 f1 Test sheet : 04.05.90 Edition : 4.85 Replaces Phasina Test oil : ISO-4113 : 0 402 046 758 Tolerance + - ° Combination no. BASIC SETTING Injection pump Pump designation : PES6P120A320RS3139 : 0 412 026 718 rpm: 600 1st speed EP type number Governor Governor design. : RQV275...950PA728-1 Rack travel in mm : 12.50...12.60 : 0 421 813 465 Governer no. Customer-spec. information : RVI Customer : MIDR 063540 Spread Engine 1st version kW : 243.0 Rated speed : 1900 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Spread Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 1st speed Test nozzle holder : 1 688 901 101 travel mm assembly 2nd speed travel mm Opening : 207...210 3rd speed pressure, bar travel mm 4th speed Orifice plate : 0,6 travel mm diameter mm Test Lines : 1 680 750 015 Outside diameter x Wall thickness : 6.00X1.50X600 x Length mm

Del.quantity cm3/: 19.7...19.9 100 s: (19.4...20.2) cm3 : 0.5100 s: (0.9) 2nd speed rpm : 275.0
Rack travel in mm : 5.20...5.40
Del.quantity cm3/: 2.1...2.7 100 s: (1.8...3.0) cm3 : 0.8 100 s: (1.2) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 275 : 1.30...1.70 rpm : 450 : 3.30...3.70 rpm : 800 : 5.60...6.00 rpm : 950 : 6.70...6.90 GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1125 Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP (A) Injection pump setting values 1st version Insp. values in parentheses Speed rpm : 600 Set equal delivery quant. Aneroid pressure h: 1000 per values ____ : 197.0...199.0 Del.quantity 1000 : (194.0...202.0) BEGINNING OF DELIVERY : 5.00 Test pressure, bar: 25...27 Spread cm3 : (9.00) 1000

: 3.50...3.60

: 0.50 (0.75)

: (3.45...3.65)

: 1-5-3-6-2-4

: 0-60-120-180-240-300

A07

RATED SPEED

1st version Control lever

position degrees: 115...123

Testina:

1st rack travel in: 11.50

rpm : 1020...1030 Speed

2nd rack travel in: 4.00

Speed rpm : 1155...1185 4th rack travel in: 1250

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 64...72

Testing:

: 200 Speed rpm Minimum rack trave: 7.10 : 275 Speed rpm

Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

rpm : 300...400 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm hPa : 1000 Pressure

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 9.10...9.5040

2nd pressure hPa : 520

Rack travel in m: 11.80...11.90

3rd pressure hPa : 200

Rack travel in m: 10.10...10.30

START CUT-OUT

Speed 1/min: 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000 rpm : 950 Speed

Del.quantity cm3/: 196.0...202.0 1000 s: (193.0...205.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 120.0...122.0 1000 s: (117.0...125.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50

rpm : 1020...1030 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 155.0...185.0

1000 s: (151.0...189.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.20...5.60

Del.quantity cm3/: 21.0...27.0 1000 s: (18.0...30.0)

cm3 : 8.00Spread

1000 s: (12.00)

Remarks:

Start-of-delivery mark 9° cam angle after start of delivery cyl. 1.

Note remarks

: RVI 6,2 a : 01.02.90 Test sheet Edition : 9.3.87 Replaces : ISO-4113 Test oil

Combination no. : 0 402 046 781

Injection pump

Pump designation : PES6P110A320RS3182 : 0 412 016 719 EP type number

Governor

Governor design. : RQV275...1175PA833

Governer no.

: 0 421 813 583

Customer-spec. information Customer : RVI

Engine : MIDR 060226

: 151.0 1st version kW : 2350 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.80...4.90 Prestroke mm : (4.75...4.65)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

BASIC SETTING

1st speed rpm: 1175

Rack travel in mm : 13.80...13.90

Del.quantity cm3/: 10.2...10.5

100 s: (9.9...10.7)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 275.0 2nd speed Rack travel in mm : 6.2...6.4 Del.quantity cm3/ : 1.3...1.8 100 s: (1.0...2.0)

cm3 : 0.4Spread 100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

: 1.00...1.20 travel mm

rpm : 450 2nd speed travel mm : 3.50...3.90

rpm : 800 3rd speed

: 5.50...5.90 rpm : 1175 travel mm

4th speed

: 7.80...8.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1250 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1175 Speed

Aneroid pressure h: 1000

: 102.0...105.0 Del.quantity 1000 : (99.5...107.5)

: 4.00 cm3 Spread

1000 : (7.50)

RATED SPEED

A09

1st version Control Lever position degrees: 116...124 Testina: 1st rack travel in: 12.80 rpm : 1245...1255 Speed 2nd rack travel in: 4.00 rpm : 1395...1425 Speed 4th rack travel in: 1500 rom : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 85...93 Testing: Speed : 200 rpm Minimum rack trave: 8.90 : 275 Speed rpm Rack travel in mm : 6.20...6.40 CONSTANT REGULATION rpm : 375...480 Speed Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rom hPa : 1000 Pressure Measurement $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 10.70...11.00 2nd pressure hPa : 500 Rack travel in m: 13.10...13.20 3rd pressure hPa : 240 Rack travel in m: 11.80...12.00 START CUT-OUT Speed 1/min: 195 (215) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 Speed rpm : 700 Del.quantity cm3/: 102.0...106.0 1000 s: (99.0...109.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.80 Speed rpm : 1245...1255

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 120.0...150.0 1000 s: (116.0...154.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 6.20...6.40
Del.quantity cm3/: 13.0...18.0
1000 s: (10.5...20.5)
Spread cm3 : 4.50

1000 s: (7.50)

:

Remarks:

Speed

Aneroid pressure h: -

rpm : 500

Del.quantity cm3/: 48.0...51.0 1000 s: (45.5...53.5)

: 3.50...3.60 BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : (3.45...3.65) Rack travel in mm : 9.00...12.00 Note remarks : 1-5-3-6-2-4 Firing order : RVI 9,8 e Test sheet : 04.05.90 Edition : 25.8.89 Replaces : 0-60-120-180-240-300 : ISO-4113 Phasing Test oil : 0 402 046 784 Tolerance + - ° : 0.50 (0.75) Combination no. BASIC SETTING Injection pump : PES6P120A320RS3139 Pump designation : 0 412 026 718 rpm: 1000 EP type number 1st speed Governor Rack travel in mm : 11.20...11.30 Governor design. : RQV275...1000PA728-2 : 0 421 813 599 Governer no. Del.quantity cm3/: 16.0...16.2 Customer-spec. information 100 s: (15.7...16.5) : RVI Customer cm3 : 0.5: MIDR 062045 E Spread Engine : 236.0 100 s: (0.9) 1st version kW : 2000 Rated speed 2nd speed rpm : 275.0 Rack travel in mm : 5.2...5.4 TEST BENCH REQUIREMENTS Del.guantity cm3/: 3.1...3.7 100 s: (2.8...4.0) Test oil inlet temp. °C cm3 : 0.8: 38...42 Spread 100 s: (1.2) Overflow valve : 1 417 413 025 (B) Setting of injection pump with governor Inlet press., bar: 1.50 GUIDE SLEEVE TRAVEL rpm : 250 1st speed Test nozzle holder : 1 688 901 101 : 0.90...1.10 travel mm assembly rpm : 450 2nd speed : 3.30...3.70 travel mm Openina : 207...210 3rd speed rpm : 800 pressure, bar travel mm : 5.60...6.00 rpm : 10004th speed Orifice plate : 7.00...7.20 travel mm diameter mm : 0,6 GUIDE SLEEVE POSITION Test lines : 1 680 750 008 Control-Lever position Degree: -1 rpm : 1170 Outside diameter Rack travel in mm : 15.20...17.80 x Wall thickness : 6.00X2.00X600 x Length mm FULL LOAD DELIV. AT FULL LOAD STOP (A) Injection pump setting values Insp. values in parentheses 1st version rpm : 1000 Set equal delivery quant. Speed Aneroid pressure h: 1000 per values : 160.0...162.0 Del.quantity 1000 : (157.0...165.0) BEGINNING OF DELIVERY : 5.00

cm3

1000

: (9.00)

Spread

Test pressure, bar: 25...27

RATED SPEED

1st version Control lever

position degrees: 115...123

Testing:

1st rack travel in: 10.20

rpm : 1065...1075 Speed

2nd rack travel in: 4.00

Speed rpm : 1180...1210 4th rack travel in: 1300

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 64...72

Testina:

: 200 Speed rom Minimum rack trave: 7.20 rom : 275

Rack travel in mm : 5.30...5.70

CONSTANT REGULATION

rpm : 230...320 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 man hPa : 1000 Pressure

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 8.10...8.50

2nd pressure hPa : 320

Rack travel in m: 10.50...10.60 3rd pressure hPa : 160

Rack travel in m: 9.10...9.30

START CUT-OUT

1/min: 195 (215) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000 Speed rpm : 600

Del.quantity cm3/: 182.5...188.5 1000 s: (179.5...191.5)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 111.0...113.0

1000 s: (108.0...116.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.20

rpm : 1065...1075 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 155.0...185.0

1000 s: (151.0...189.0)

LOW IDLE

Speed rpm: 275
Rack travel in mm: 5.20...5.40
Del.quantity cm3/: 31.0...37.0

1000 s: (28.0...40.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

Start-of-delivery mark 9° cam angle after start of delivery cyl. 1.

A12

Note remarks

Test sheet : RVI 12,0 f2 : 04.05.90 **Fdition** : 7.2.89 Replaces : ISO-4113 Test oil

: 0 402 046 791 Combination no.

Injection pump

Pump designation : PES6P120A320RS3139 : 0 412 026 718 EP type number

Governor

Governor design. : RQV275...950PA728-4

: 0 421 813 678 Governer no.

Customer-spec. information Customer : RVI

Engine : MIDR 063540 H

: 264.0 1st version kW : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

: 1 680 750 015 Test Lines

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.50...3.60 : (3.45...3.65) Prestroke mm

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

BASIC SETTING

rom: 600 1st speed

Rack travel in mm : 13.30...13.40

Del.quantity cm3/: 21.2...21.4

100 s: (20.9...21.7)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 275.02nd speed Rack travel in mm : 7.3...7.7 Del.quantity cm3/ : 2.3...2.9

100 s: (2.0...3.2)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 275 : 1.30...1.70 1st speed travel mm

rpm : 450 2nd speed : 3.30...3.70 travel mm

rpm : 800 3rd speed

: 5.60...6.00 travel mm

: 950 4th speed rom

: 6.70...6.90 travel mm

rpm : 1500 5th speed

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1125

Rack travel in mm : 15.20... 17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed Aneroid pressure h: 1000

Del.quantity : 272.0...217.0)

cm3 : 5.00 1000 : (9.00) Spread

RATED SPEED

1st version Control lever

position degrees: 118...126

Testing:

1st rack travel in: 12.30 rpm : 1015...1025 Speed

2nd rack travel in: 4.00

Speed rpm : 1160...1190 4th rack travel in: 1250

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 65...73

Testing:

Speed : 200 rom Minimum rack trave: 7.60 rpm : 275

Rack travel in mm : 5.70...5.90

CONSTANT REGULATION

rpm : 295...400 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm hPa : 1000 Pressure

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.30...9.60

2nd pressure hPa : 660

Rack travel in m: 12.60...12.70 3rd pressure hPa : 200

Rack travel in m: 10.20...10.40

START CUT-OUT

Speed 1/min: 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000 rpm : 950 Speed

Del.quantity cm3/: 210.0...216.0 1000 s: (207.0...219.0)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 120.0...122.0

1000 s: (117.0...125.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.30

rpm : 1015...1025 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 150.0...180.0

1000 s: (146.0...184.0)

LOW IDLE

rpm : 275 Speed

Rack travel in mm : 5.60...6.00 Del.quantity cm3/: 23.0...29.0 1000 s: (20.0...32.0)

cm3 : 8.00Spread

1000 s: (12.00)

Remarks:

Start-of-delivery mark 9° cam angle

after start of delivery cyl. 1.

Note remarks

: MB 11,7 a14 : 16.02.90 Test sheet Edition : 8.5.89 Replaces : ISO-4113 Test oil

Combination no. : 0 402 046 807

Injection pump

Pump designation : PES6P110A820LS3131-1

: 0 412 016 717 EP type number

Governor

Governor design. : RQV300..1100PA916

: D 421 813 748 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: OM447 Engine

: 168.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.30...4.40 Prestroke mm : (4.25...4.45)

Rack travel in mm : 9.00...12.00

: 6-2-4-1-5-3 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 6

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 11.40...11.50

Del.guantity cm3/: 13.7...13.9

100 s: (13.4...14.1)

cm3 : 0.4Spread

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm: 7.6...7.8 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3)

cm3 : 0.4Spread

100 s: (0.8)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 300 : 1.10...1.40 travel mm

rpm : 450 2nd speed

: 3.40...3.80 travel mm

rpm : 1150 3rd speed

: 7.90...8.30 travel mm

rpm : 1225 4th speed

: 9.10...9.70 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1160 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

: 137.0...139.0 Del.quantity

1000 : (134.5...141.5)

cm3 : 4.00 Spread 1000 : (8.00) RATED SPEED 1st version Control lever position degrees: 114...122 Testing: 1st rack travel in: 10.40 rpm : 1140...1150 Speed 2nd rack travel in: 4.00 rpm : 1195...1225 Speed 4th rack travel in: 1300 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 85...93 Testing: Speed : 200 rpm Minimum rack trave: 9.20 : 300 rpm Rack travel in mm : 7.60...7.80 CONSTANT REGULATION rpm : 300...500 Speed START CUT-OUT 1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version rpm : 600 Speed Del.quantity cm3/: 113.0...116.0 1000 s: (110.0...119.0) : 5.00 cm3 Spread 1000 s: (9.00) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.40 rpm : 1140...1150 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 130.0...150.0 1000 s: (126.0...154.0)

Remarks:

Note remarks

Test sheet : MAN 11,9 m3 : 23.03.90 Edition

Replaces

: ISO-4113 Test oil

: 0 402 046 809A Combination no.

Injection pump

Pump designation : PES6P120A720LS3229 : D 412 026 733

EP type number

Governor

Governor design. : RQ900PA661-2 : 0 421 801 343 Governer no.

: 2-7971 Cust. part no.

Customer-spec, information : MAN Customer

: D2866LE Engine

1st version kW : 265.0 : 1800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening.

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

: 1 680 750 075 Test lines

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.80...3.90 Prestroke mm

: (3.75...3.95)

Rack travel in mm : 9.00...12.00

: 6-2-4-1-5-3 Firing order

: 0-60-120-180-240-300 Phasing

Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

rpm: 850 1st speed

Rack tracel in mm : 12.50...12.60

Del.quantity cm3/: 28.9...29.1

100 s: (28.6...29.4)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm : 4.1...4.7 Del.quantity cm3/ : 2.4...3.0

100 s: (2.1...3.3)

cm3 : 0.8Spread 100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed

: 289.0...291.0 Del.quantity

1000 : (286.0...294.0)

: 5.00 Spread cm3 1000 : (9.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 11.50 rpm : 900...905

2nd rack travel in: 4.00 rpm : 940...955 Speed

4th rack travel in: 1050

rpm : 0.00...1.00Speed

INTERMEDIATE RATED SPEED Rack travel in mm: 4.00

STARTING FUEL DELIVERY

Remarks:

APPLICATION

Generator set

Note remarks

Test sheet : MAN 11,9 m1 : 30.03.90 Edition : 15.8.89 Replaces : ISO-4113 Test oil

: 0 402 046 810 Combination no.

Injection pump

Pump designation : PES6P120A720LS3229 : 0 412 026 733 EP type number

Governor

Governor design. : RQ750PA661-4 : 0 421 801 361 Governer no.

Customer-spec. information : MAN Customer

Engine : D2866TE

: 190.0 1st version kW Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina .

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.80...3.90 Prestroke mm

: (3.75...3.95)

Rack travel in mm : 9.00...12.00 : 6-2-4-1-5-3 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

rpm : 7001st speed

Rack travel in mm : 11.20...11.30

Del.quantity cm3/: 23.1...23.3

100 s: (22.8...23.6)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in mm: 4.5...4.9 Del.quantity cm3/: 2.4...3.0

100 s: (2.1...3.3)

cm3 : 0.8 Spread

100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

: 231.0...233.0 Del.quantity 1000 : (228.0...236.0)

: 5.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version

Testina:

1st rack travel in: 10.20

rpm : 750...755 Speed 2nd rack travel in: 4.00

rpm : 782...795 Speed

4th rack travel in: 950

rpm : 0.00...1.00Speed

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.20 Speed rpm : 750...755

Remarks:

APPLICATION

Generator set

: 2.80...2.90 BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : (2.75...2.95) Rack travel in mm : 9.00...12.00 Note remarks : 1- 8- 4- 2-Firing order 6-5 : RVI 14,9 i Test sheet : 19.03.90 Edition : 9.11.89 Replaces Test oil : ISO-4113 : 0-45-90-135-180-225-Phasing 270-315 Combination no. : 0 402 048 049 : 0.50 (0.75) Tolerance + - ° Injection pump Pump designation : PES8P12CA32ORS523 BASIC SETTING : 0 412 028 024 EP type number rpm : 10501st speed Governor Governor design. : RQV275...1050PA665-3 Rack travel in mm : 11.70...11.80 : 0 421 813 677 Governer no. Del.guantity cm3/: 19.6...19.8 Customer-spec. information : RVI Customer 100 s: (19.3...20.1) : MIVRO83530 H Engine cm3 : 0.5Spread : 299.0 1st version kW 100 s: (0.9) : 2100 Rated speed rpm : 300.0 TEST BENCH REQUIREMENTS 2nd speed Rack travel in mm: 4.9...5.1 Del.quantity cm3/: 2.3...2.9 Test oil 100 s: (2.0...3.2) : 38...42 inlet temp. °C cm3 : 0.8 Spread 100 s: (1.2) Overflow valve : 1 417 413 025 (B) Setting of injection pump Inlet press., bar: 1.50 with governor Test nozzle holder GUIDE SLEEVE TRAVEL rpm : 275 : 1 688 901 019 1st speed assembly : 0.60...1.00 travel mm : 450 Openina . 2nd speed rpm 3.60...4.00 : 207...210 pressure, bar travel mm 700 3rd speed rpm 5.40...5.80 travel mm Orifice plate 1050 diameter mm : 0,8 4th speed rpm : 7.90...8.10 travel mm : 1400 5th speed rpm : 11.00...12.00 : 1 680 750 075 Test Lines travel mm GUIDE SLEEVE POSITION Outside diameter Control-lever position x Wall thickness : 6.00x1.50x1000 Degree: -1 x Length mm rpm : 1100 Speed Rack travel in mm : 15.20...17.80 (A) Injection pump setting values Insp. values in parentheses

BEGINNING OF DELIVERY Test pressure, bar: 25...27

per values ___

Set equal delivery quant.

1st version rpm : 1050 Speed Aneroid pressure h: 750

FULL LOAD DELIV. AT FULL LOAD STOP

7- 3-

: 196.0...198.0 Del.quantity 1000 : (193.0...201.0) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED

1st version Control Lever

position degrees: 118...126

Testing:

1st rack travel in: 10.70 Speed rpm : 1105...1115 2nd rack travel in: 4.00

rpm : 1205...1235 4th rack travel in: 1350

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 82...90

Testina:

Speed rpm : 200 Minimum rack trave: 8.00 rpm

Rack travel in mm : 6.20...6.40

CONSTANT REGULATION

rpm : 290...410 Speed

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm hPa : 750 Pressure

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.60...10.20 2nd pressure hPa : 170

Rack travel in m: 11.10...11.30

3rd pressure hPa : 130

Rack travel in m: 10.10...10.30

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 750

Speed rpm : 650 Del.quantity cm3/ : 184.0...190.0

1000 s: (181.0...193.0)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 130.0...132.0 1000 s: (127.0...135.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.70

rpm : 1105...1115 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 160.0...180.0

1000 s: (156.0...184.0)

LOW IDLE

rpm : 300 Speed

Rack travel in mm : 4.90...5.10 Del.quantity cm3/: 23.0...29.0 1000 s: (20.0...32.0)

cm3 : 8.00 Spread 1000 s: (12.00)

Remarks:

Start-of-delivery mark 11.5° cam angle after start of delivery cyl. 1

A22

BOSCH INJ. PUMP TEST SPECIFICATIONS : 4.30...4.40 Prestroke mm : (4.25...4.45) Note remarks Rack travel in mm : 9.00...12.00 Firing order : 1-3-5-4-2 Firing order Test sheet : MB 10,0 w : 15.03.90 Edition Replaces : ISO-4113 Test oil : 0-72-144-216-288 Phasing : 0 402 075 700 Combination no. Tolerance + - ° : 0.50 (0.75) Injection pump Pump designation : PES5P110A720LS3218 Time to cyl. no. : 5 : 0 412 015 702 EP type number Governor BASIC SETTING : RSV350...1100P0A487-Governor design. rpm: 1080 1st speed : 0 421 833 314 Governer no. Rack travel in mm : 10.80...10.90 Customer-spec. information Del.quantity cm3/: 13.5...13.7 : MERCEDES-BENZ Customer 100 s: (13.2...13.9) : 0M449 Engine Spread cm3 : 0.41st version kW : 140.0 : 2200 Rated speed 100 s: (0.8) TEST BENCH REQUIREMENTS rpm : 350.0 2nd speed Rack travel in mm : 6.3...6.7 Del.quantity cm3/ : 1.2...1.8 Test oil inlet temp. °C : 38...42 100 s: (0.9...2.0) Overflow valve cm3 : 0.4Spread 100 s: (0.7) : 1 417 413 025 GUIDE SLEEVE POSITION Inlet press., bar: 1.50 Control-lever position Degree: -3 Overflow quantity min. 1/h: 100...120 rpm : 800 Speed Rack travel in mm : 0.30...0.70 Test nozzle holder : 0 681 343 009 FULL LOAD DELIV. AT FULL LOAD STOP assembly 1st version Opening rpm : 1080 : 172...175 pressure, bar Speed Del.quantity : 135.0...137.0 1000 : (132.5...139.5) : 4.00 Test lines : 1 680 750 015 Spread cm3 1000 : (8.00) Outside diameter RATED SPEED x Wall thickness : 6.00x1.50x600 x Length mm 1st version Control lever (A) Injection pump setting values Insp. values in parentheses position degrees: 90...98

Testing:

Speed

1st rack travel in: 9.80

2nd rack travel in: 4.00

rpm : 1130...1140

BEGINNING OF DELIVERY Test pressure, bar: 25...27

per values

Set equal delivery quant.

Speed rpm : 1190...1220 4th rack travel in: 1250 Speed rpm : 0.30...1.40LOW IDLE 1 Control lever position degrees: 66...74 Setting point w/out bumper spring : 350 rpm Rack travel in mm: 6.5 : 350 Speed rpm Rack travel in mm : 6.30...6.70 Rack travel in mm : 2.00 rpm : 470...530 Speed SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00 FUEL DELIVERY CHARACTERISTICS 1st version : 600 Speed rpm Del.quantity cm3/: 114.0...118.0 1000 s: (111.0...121.0) Spread cm3 : 6.001000 s: (9.00) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.80 rpm : 1130...1140 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0) Remarks:

Note remarks

: MB 10,0 w 1 : 15.03.90 Test sheet Edition

Replaces

Test oil : ISO-4113

: 0 402 075 701 Combination no.

Injection pump

Pump designation : PES5P110A720LS3218

EP type number : 0 412 015 702

Governor

Governor design. : RSV350...1100P0A487-

: 0 421 833 315 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: OM449 Engine

1st version kW : 147.0 : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.30...4.40 Prestroke mm

: (4.25...4.45)

Rack travel in mm : 9.00...12.00 : 1-3-5-4-2 Firing order

Phasina : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm: 1080

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 14.4...14.4

100 s: (14.1...14.6)

cm3 : 0.4Spread

100 s: (0.8)

rpm : 350.02nd speed Rack travel in mm : 6.3...6.7 Del.quantity cm3/: 1.2...1.8 100 s: (0.9...2.0)

cm3 : 0.4Spread

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1080 Speed

Del.quantity : 144.0...144.0 : (141.5...146.5) 1000

: 4.00 Spread cm3 1000 : (8.00)

RATED SPEED

1st version

Control lever

position degrees: 90...98

Testing:

1st rack travel in: 10.50 Speed rpm : 1130...1140 2nd rack travel in: 4.00 rpm : 1190...1220 Speed 4th rack travel in: 1250 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 66...74 Setting point w/out bumper spring : 350 rpm Speed Rack travel in mm: 6.5 Speed rpm : 350
Rack travel in mm : 6.30...6.70
Rack travel in mm : 2.00 rpm : 470...530 Speed SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00 FUEL DELIVERY CHARACTERISTICS 1st version : 600 Speed rpm Del.quantity cm3/: 124.0...128.0 1000 s: (121.0...131.0) cm3 : 6.00 Spread 1000 s: (9.00) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.50 rpm : 1130...1140 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0) Remarks:

Note remarks

Test sheet : DEE 7,6 y 1 : 02.05.90 Edition : 28.9.89 Replaces : ISO-4113 Test oil

Combination no. : 0 402 076 722

Injection pump

Pump designation : PES6P120A720RS3203 : 0 412 026 728 EP type number

Governor

Governor design. : RSV400...1100P2A534

: 0 421 833 275 Governer no.

Customer—spec. information Customer : JOHN DEERE

Engine : 6466 HF-050

: 194.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening .

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.6

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x3.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 3.55...3.65 : (3.50...3.70) Prestroke mm

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 15.6...15.8

100 s: (15.4...16.1)

Spread cm3 : 0.4

100 s: (0.6)

rpm : 400.0 2nd speed Rack travel in mm: 4.8...5.0 Del.quantity cm3/: 1.7...2.2 100 s: (1.5...2.5)

cm3 : 0.6 Spread

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed Aneroid pressure h: 1200

: 156.5...158.5 Del.quantity 1000 : (154.0...161.0)

: 4.00 Spread cm3

1000 : (6.50)

RATED SPEED

1st version Control lever

position degrees: 40...48

Testing:

1st rack travel in: 11.00 rpm : 1145...1155 Speed 2nd rack travel in: 4.00 Speed rpm : 1200...1210 4th rack travel in: 1300 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 16...24 Setting point w/out bumper spring : 400 rpm Rack travel in mm: 4.4 Testing: Speed rpm : 100 Minimum rack trave: 19.00 : 400 rpm Rack travel in mm : 4.80...5.00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 12.00...12.10 rpm : 750 2nd speed Rack travel in m: 12.80...13.00 Aneroid/Altitude Compensator Test 1st version Settina Speed : 500 rpm Pressure hPa : -: 10.30...10.50 Rack travel mm Measurement $1/\min : 500$ Speed 1st pressure hPa : 605 Rack travel in m: 11.00...11.10 2nd pressure hPa : 780 Rack travel in m: 12.10...12.50 3rd pressure hPa : 1200 Rack travel in m: 12.80...13.00 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 rpm : 750 Speed Del.quantity cm3/: 174.5...179.5 1000 s: (172.0...182.0) Aneroid pressure h: -

rpm : 800

1000 s: (114.5...124.5)

Del.quantity cm3/: 117.5...121.5

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.00 Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm: 100

Del.quantity cm3/: 90.0...110.0 1000 s: (85.0...115.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400 Rack travel in mm : 4.80...5.00 Del.quantity cm3/ : 17.5...22.5 1000 s: (15.0...25.0)

Spread cm3 : 6.00 1000 s: (8.00)

Remarks:

: JOHN DEERE # RE32035

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Starting/full-load transition speed from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle after start of delivery cyl. 1

Speed

Note remarks

Test sheet Edition : DEE 7,6 y : 02.05.90 : 28.9.89 Replaces : ISO-4113 Test oil

Combination no. : 0 402 076 723

Injection pump

Pump designation : PES6P120A720RS3203

: 0 412 026 728 EP type number

Governor

: RSV400...1100P2A534-Governor design.

: 0 421 833 276 Governer no.

Customer-spec. information : JOHN DEERE Customer

: 6466 AF-050 Engine

: 180.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

: 6.00x3.00x600 x Lenath mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65 : (3.50...3.70)

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 11.80...11.90

Del.quantity cm3/: 15.0...15.2

100 s: (14.7...15.4)

cm3 : 0.4Spread

100 s: (0.6)

2nd speed rpm : 400.0 Rack travel in mm : 4.8...5.0 Del.quantity cm3/: 1.7...2.2 100 s: (1.5...2.5)

cm3 : 0.6 Spread 100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100 Aneroid pressure h: 1200

: 150.0...152.0 Del.quantity

1000 : (147.5...154.5)

cm3 : 4.00 1000 : (6.50) Spread

RATED SPEED

1st version Control lever

position degrees: 40...48

Testina: 1st rack travel in: 10.80 rpm : 1145...1155 Speed 2nd rack travel in: 4.00 rpm : 1200...1210 Speed 4th rack travel in: 1350 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 16...24 Setting point w/out bumper spring rpm : 400 Rack travel in mm: 4.4 Testing: Speed rpm : 100 Minimum rack trave: 19.00 rpm : 400 Rack travel in mm : 4.80...5.00 TORQUE CONTROL Torque control curve - 1st version st speed rpm : 1100 Rack travel in m: 11.80...11.90 1st speed 2nd speed rpm : 700 Rack travel in m: 12.60...12.80 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed man hPa : 1200 Pressure : 12.60...12.80 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.40...10.60 2nd pressure hPa : 720 Rack travel in m: 11.00...11.10 3rd pressure hPa : 895 Rack travel in m: 11.80...12.20 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 rpm : 700 Speed

Del.quantity cm3/: 173.5...178.5 1000 s: (171.0...181.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.80 rpm : 1145...1155 beed

STARTING FUEL DELIVERY

rpm : 100 Speed Del.quantity cm3/: 90.0...110.0 1000 s: (85.0...115.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

rpm : 400 Speed Rack travel in mm : 4.80...5.00 Del.quantity cm3/: 17.5...22.5 1000 s: (15.0...25.0)

cm3 : 6.00Spread 1000 s: (8.00)

Remarks:

: JOHN DEERE # RE32033

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Starting/full-load transition speed from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle after start of delivery cyl. 1

Aneroid pressure h: -

rpm

: 800

Del.quantity cm3/: 120.0...124.0 1000 s: (117.0...127.0)

Note remarks

: DEE 10,1 f Test sheet : 02.05.90 Edition : 7.4.89 Replaces Test oil : ISO-4113

Combination no. : 0 402 076 726

Injection pump

Pump designation : PES6P110A720RS3209 : D 412 016 722

EP type number

Governor

Governor design. : RSV400...1050P0A537

: 0 421 833 287 Governer no.

Customer-spec. information Customer : JOHN DEERE

: 6619 AT 06 Engine

: 172.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening.

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x3.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 3.45...3.55 Prestroke mm

: (3.40...3.60)

Rack travel in mm: 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 11.20...11.30

Del.quantity cm3/: 16.7...16.9

100 s: (16.5...17.2)

cm3 : 0.4Spread

100 s: (0.7)

2nd speed rpm : 400.0Rack travel in mm : 5.0...5.2 Del.quantity cm3/ : 1.6...2.1

100 s: (1.3...2.3)

Spread cm3 : 0.4100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Dearee: -3

rpm : 800 Speed Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

: 167.5...169.5 Del.quantity

1000 : (165.0...172.0)

: 4.00 cm3 Spread

1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 39...47

Testina:

1st rack travel in: 10.20 Speed rpm : 1090...1100

2nd rack travel in: 4.00

rpm : 1150...1160 Speed

3rd rack travel in: 4.00

rpm : 1160...1190 Speed

4th rack travel in: 1250

rom : 0.30...1.40Speed

LOW IDLE 1 Control lever

position degrees: 19...27

Setting point w/out bumper spring

rpm : 400 Rack travel in mm: 4.6

Testing:

: 100 Speed rpm Minimum rack trave: 19.00 : 400 rom

Rack travel in mm : 5.00...5.20

TORQUE CONTROL

Torque control curve - 1st version

1st speed rom : 1050

Rack travel in m: 11.20...11.30

2nd speed rpm : 700

Rack travel in m: 11.60...11.80

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700 Del.quantity cm3/ : 171.5...176.5 1000 s: (169.0...179.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.20

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 175.0...195.0 1000 s: (170.0...200.0) Rack travel in mm: 20.00...21.00

LOW IDLE

rpm : 400 Speed

Rack travel in mm : 5.00...5.20 Del.quantity cm3/: 16.0...21.0

1000 s: (13.5...23.5)

cm3 : 4.50Spread

1000 s: (7.50)

Remarks:

B04

: JOHN DEERE # RE33898

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

The stop position of the control rod must be easily reached with the stop lever

Start-of-delivery mark at 14° angular displacement of the cam after start of delivery of cylinder 1 with control-rod travel = 10.50 mm.

Note remarks

: DEE 7,7 b : 02.05.90 Test sheet Edition : 28.9.89 Replaces : ISO-4113 Test oil

: 0 402 076 727 Combination no.

Injection pump

Pump designation : PES6P120A720RS3203 : 0 412 026 728

EP type number

Governor : RSV400...1100P2A534-Governor design.

: 0 421 833 290 Governer no.

Customer-spec. information : JOHN DEERE Customer

: 6076AF Engine

: 160.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

: 6.00X3.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65

: (3.50...3.70)

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 13.4...13.6

100 s: (13.1...13.8)

Spread cm3 : 0.4

100 s: (0.6)

rpm : 400.0 2nd speed Rack travel in mm: 4.8...5.0 Del.quantity cm3/: 1.7...2.2

100 s: (1.5...2.5)

cm3 : 0.6Spread 100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100 Aneroid pressure h: 900

: 134.0...136.0 Del.quantity 1000 : (131.5...138.5)

cm3 : 4.00 Spread

1000 : (6.50)

RATED SPEED

1st version Control Lever

position degrees: 40...48

Testina: 1st rack travel in: 10.10 rpm : 1145...1155 Speed 2nd rack travel in: 4.00 rpm : 1200...1210 Speed 4th rack travel in: 1300 rpm : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 16...24 Setting point w/out bumper spring : 400 Speed rom Rack travel in mm: 4.4 Testina: Speed : 100 rpm Minimum rack trave: 19.00 rpm : 400 Rack travel in mm : 4.30...4.50 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 11.10...11.20 2nd speed rpm : 700 Rack travel in m: 12.40...12.60 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm hPa Pressure : 10.50...10.70 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : 470 Rack travel in m: 11.20...11.30 2nd pressure hPa : 605 Rack travel in m: 11.80...12.20 3rd pressure hPa : 900 Rack travel in m: 12.40...12.60 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 : 700 Speed rpm Del.quantity cm3/: 165.5...170.5 1000 s: (163.0...173.0) Aneroid pressure h: -

: 800

Del.quantity cm3/: 122.0...126.0 1000 s: (119.0...129.0)

rpm

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10

Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm: 100

Del.quantity cm3/: 90.0...110.0

1000 s: (85.0...115.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400

Rack travel in mm : 4.80...5.00 Del.guantity cm3/ : 17.5...22.5

1000 s: (15.0...25.0)

Spread <u>cm3</u>: 6.00

1000 s: (8.00)

Remarks:

: JOHN DEERE # RE32034

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

The stop position of the control rod must be easily reached with the stop lever

Start-of-delivery mark 10.5° cam angle after start of delivery cyl. 1

beea

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Note remarks Rack travel in mm : 10.50 : DEE 7,7 c : 01.02.90 Firing order Test sheet Edition : 28.9.89 Replaces : TSO-4113 Test oil Phasing : 0 402 076 728 Combination no. Injection pump Pump designation : PES6P120A720RS3203 EP type number : 0 412 026 728 Governor Governor design. : RSV425...1050P2A489-1st speed : 0 421 833 291 Governer no. Customer-spec. information : JOHN DEERE Customer : 6076 HRW01 Engine : 175.0 Spread 1st version kW : 2100 Rated speed TEST BENCH REQUIREMENTS 2nd speed Test oil inlet temp. °C : 38...42 Overflow valve Spread : 1 457 413 010 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 101 assembly Opening pressure, bar : 207...210 Orifice plate : 0,6 diameter mm Test Lines : 1 680 750 015 Speed

: 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING rpm : 1050Rack travel in mm : 12.40...12.50 Del.quantity cm3/: 16.6...16.8 100 s: (16.3...17.0) cm3 : 0.4100 s: (0.6) rpm : 425.0 Rack travel in mm : 5.5...5.7 Del.quantity cm3/: 3.1...3.6 100 s: (2.9...3.9) cm3 : 0.6100 s: (0.8) GUIDE SLEEVE POSITION Control-lever position Degree: -3 Speed rpm: 800 Rack travel in mm: 0.30...0.70 Governor spring pre-tension Click setting x : 4.75FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1050 Aneroid pressure h: 1200 Del.quantity : 166.0...168.0 Outside diameter 1000 : (163.5...170.5) x Wall thickness : 6.00X3.00X600 : 4.00 Spread cm3 x Length mm 1000 : (6.50) (A) Injection pump setting values RATED SPEED Insp. values in parentheses Set equal delivery quant. 1st version per values Control Lever position degrees: 40...48 BEGINNING OF DELIVERY Test pressure, bar: 27...29

: 3.55...3.65

: (3.50...3.70)

: 1-5-3-6-2-4

Testing:

1st rack travel in: 11.40

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

Speed rpm : 1160...1170 4th rack travel in: 1250

rpm : 0.30...1.40 Speed

LOW IDLE 1

Control lever

position degrees: 20...28 Setting point w/out bumper spring

rpm : 425 Rack travel in mm : 5.1

Testing:

rpm : 100 Speed Minimum rack trave: 19.00

rpm : 425

Rack travel in mm : 5.50...5.70 Rack travel in mm : 2.00 : 610...670 Speed rom

TORQUE CONTROL

Torque control curve – 1st version 1st speed rpm : 1050

Rack travel in m: 12.40...12.50

2nd speed rpm : 600

Rack travel in m: 13.60...13.80

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rom hPa : 1200 Pressure

: 13.60...13.80 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -Rack travel in m: 12.10...12.30 2nd pressure hPa : 725

Rack travel in m: 12.50...12.60

3rd pressure hPa : 815

Rack travel in m: 12.90...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

: 600 Speed rpm

Del.quantity cm3/: 197.5...202.5 1000 s: (195.0...205.0)

Aneroid pressure h: -

: 800 Speed rpm

Del.quantity cm3/: 157.0...161.0 1000 s: (154.0...164.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.40

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 90.0...110.0

1000 s: (85.0...115.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 425 Rack travel in mm : 5.50...5.70

Del.quantity cm3/: 31.5...36.5 1000 s: (29.0...39.0)

cm3 : 6.00 Spread

1000 s: (8.00)

Remarks:

: JOHN DEERE # RE32888

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

The stop position of the control rod must be easily reached with the stop Lever

Start-of-delivery mark 10.5° cam angle after start of delivery cyl. 1

Note remarks

: DEE 10,1 g : 02.05.90 Test sheet Edition : 28.9.89 Replaces Test oil : ISO-4113

Combination no. : 0 402 076 730

Injection pump

Pump designation : PES6P110A720RS3217 : 0 412 016 724 EP type number

Governor

: RSV550...1050P2A534-Governor design.

: 0 421 833 304 Governer no.

Customer-spec. information : JOHN DEERE Customer

: 6619AT07 Engine

: 205.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 103 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.7

: 1 680 750 008 Test Lines

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.45...3.55 : (3.40...3.60)

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 18.3...18.5

100 s: (18.1...18.8)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 550.0 2nd speed Rack travel in mm : 5.2...5.4 Del.quantity cm3/ : 3.3...3.7

100 s: (3.1...3.9)

cm3 : 0.4 Spread

100 s: (0.7)

GUIDE SLEEVE POSITION Control-Lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed Aneroid pressure h: 900

Del.quantity : (183.3...(388.0)

cm3 : 4.00 1000 : (7.50) Spread

RATED SPEED

1st version Control lever

position degrees: 41...49

Testina:

1st rack travel in: 11.10

rpm : 1095...1105 Speed

2nd rack travel in: 4.00

rpm : 1180...1190 Speed

3rd rack travel in: 4.00

Speed rpm : 1195...1215 4th rack travel in: 1275

rpm : 0.30...1.40Speed

LOW IDLE 1

Control lever

position degrees: 22...30

Setting point w/out bumper spring

rpm : 550 Rack travel in mm: 4.8

Testina:

: 100 Speed rpm Minimum rack trave: 19.00

: 550 Speed rpm

Rack travel in mm : 5.20...5.40

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rom hPa : 900 Pressure

: 12.10...12.20 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 10.60...10.80

2nd pressure hPa : 295

Rack travel in m: 11.00...11.10
3rd pressure hPa : 510
Rack travel in m: 11.70...12.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 167.0...171.0

1000 s: (165.0...173.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.10

rom: 1095...1105 Speed

STARTING FUEL DELIVERY

rpm : 100Speed

Del.quantity cm3/: 180.0...200.0

1000 s: (175.0...205.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm

Rack travel in mm: 5.20...5.40 Del.quantity cm3/: 33.0...37.0 1000 s: (31.0...39.0)

Spread cm3 : 4.50

1000 s: (7.50)

Remarks:

: JOHN DEERE # RE36078

The stop position of the control rod must be easily reached with the stop lever

Start-of-delivery mark 10.5° cam angle after start of delivery cyl. 1

B10

Note remarks

Test sheet : DEE 10,1 g1
Edition : 01.02.90
Replaces : 28.9.89
Test oil : ISO-4113

Combination no. : 0 402 076 731

Injection pump

Pump designation : PES6P110A720RS3217

EP type number : 0 412 016 724

Governor

Governor design. : RSV400...1050P2A534-

4

Governer no. : 0 421 833 305

Customer-spec. information

Customer : JOHN DEERE

Engine : 6101 H

1st version kW : 224.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X3.00X600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.45...3.55

: (3.40...3.60)

Rack travel in mm : 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 13.10...13.20

Del.quantity cm3/ : 21.7...21.9

100 s: (21.4...22.1)

Spread cm3: 0.4

100 s: (0.7)

2nd speed rpm : 400.0 Rack travel in mm : 5.8...6.0 Del.quantity cm3/ : 2.6...3.1

100 s: (2.3...3.3)

Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

Speed rpm: 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1050 Aneroid pressure h: 1200

Del.quantity : 217.0...219.0 1000 : (214.5...221.5)

cm3 : 4.00

1000 : (7.50)

RATED SPEED

Spread

1st version

Control Lever

position degrees: 36...44

Testing:

1st rack travel in: 12.10

Speed rpm : 1090...1100

2nd rack travel in: 4.00

rpm : 1170...1180 Speed

4th rack travel in: 1300

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 14...22

Setting point w/out bumper spring

rpm : 400 Rack travel in mm: 5.4

Testing:

Speed : 100 rpm Minimum rack trave: 19.00 rpm : 400

Rack travel in mm : 5.80...6.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050 Rack travel in m: 13.10...13.20

2nd speed rpm : 700

Rack travel in m: 14.10...14.30

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm hPa : 1200 Pressure

: 14.10...14.30 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -Rack travel in m: 10.90...11.10

2nd pressure hPa : 325

Rack travel in m: 11.60...11.70

3rd pressure hPa : 640

Rack travel in m: 12.90...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 700 Del.quantity cm3/: 233.5...238.5 1000 s: (231.0...241.0)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 160.0...164.0 1000 s: (157.0...167.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.10

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 165.0...185.0 1000 s: (160.0...190.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

rpm : 400 Speed

Rack travel in mm : 5.80...6.00 Del.quantity cm3/: 26.0...31.0 1000 s: (23.5...33.5)

cm3 : 4.50 Spread 1000 s: (7.50)

Remarks:

: JOHN DEERE # RE36881

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Starting/full-load transition speed from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle after start of delivery cyl. 1

APPLICATION

Tractor (tractor engines)

Note remarks

: MB 11,7 d 3 Test sheet : 19.03.90 Edition : 7.2.89 Replaces : ISO-4113 Test oil

Combination no. : 0 402 076 732

Injection pump

Pump designation : PES6P110A820LS3131-1

: 0 412 016 717 EP type number

Governor

Governor design. : RSV350..1100P0A487-6

: 0 421 833 311 Governer no.

Customer-spec. information

: DAIMLER-BENZ Customer

Engine : 0M447

1st version kW : 177.0 : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.30...4.40 Prestroke mm

: (4.25...4,45)

Rack travel in mm : 9.00...12.00 Firing order : 6-2-4-1-5-3

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 1080

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 14.4...14.6

100 s: (14.1...14.8)

cm3 : 0.4Spread

100 s: (0.8)

rpm : 350.0 2nd speed

Rack travel in mm: 7.0...7.3 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3)

cm3 : 0.4Spread

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1080 Speed

: 144.0...146.0 Del.quantity

1000 : (141.5...148.5)

: 4.00 Spread cm3

1000 : (8.00)

RATED SPEED

1st version

Control lever

position degrees: 93...101

Testina:

1st rack travel in: 10.70

rpm : 1130...1140 Speed 2nd rack travel in: 4.00 rpm : 1190...1220 Speed 4th rack travel in: 1350 Speed rpm : 0.30...1.40LOW IDLE 1 Control lever position degrees: 70...78 Setting point w/out bumper spring Speed rpm: 350 Rack travel in mm: 7.1 Testina: : 100 Speed rpm Minimum rack trave: 19.50 : 350 Speed rpm Rack travel in mm : 7.00...7.30 Rack travel in mm : 2.00 Speed : 400...440 mar SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00 FUEL DELIVERY CHARACTERISTICS 1st version : 600 Speed rpm Del.quaritity cm3/: 123.0...127.0 1000 s: (120.0...130.0) Spread cm3 : 6.001000 s: (9.00) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.70 rpm : 1130...1140 Speed STARTING FUEL DELIVERY : 100 rpm Del.quantity cm3/: 130.0...150.0 1000 s: (126.0...154.0) LOW IDLE Speed : 350 rpm Rack travel in mm : 7.00...7.30 Del.quantity cm3/: 14.0...20.0 1000 s: (11.0...23.0) cm3 : 4.50Spread 1000 s: (7.00) Remarks:

B14

Note remarks

: DEE 7,7 g Test sheet : 02.05.90 Edition : 28.9.89 Replaces Test oil : ISO-4113

Combination no. : 0 402 076 733

Injection pump

Pump designation : PES6P110A720RS3224 : 0 412 016 726

EP type number

Governor

: RSV475...1050P2A534-Governor design.

: D 421 833 313 Governer no.

Cust. part no. : RE39856

Customer-spec. information Customer : JOHN DEERE

: 6101 AT 001 Engine

: 170.0 : 2100 1st version kW Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

: 1 680 750 015 Test lines

Outside diameter

x Wall thickness

: 6.00X3.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 3.35...3.45 : (3.30...3.50) Prestroke mm

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 10501st speed

Rack travel in mm : 13.20...13.30

Del.quantity cm3/: 15.8...16.0

100 s: (15.6...16.2)

cm3 : 0.4Spread

100 s: (0.6)

2nd speed rpm : 475.0

Rack travel in mm: 6.0...6.2 Del.quantity cm3/: 1.0...1.4

100 s: (0.8...1.7)

Spread cm3 : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 700

Aneroiu p. Del.quantity 1000 : 158.0...160.0

: (156.0...162.0)

cm3 : 4.00 Spread

1000 : (6.50)

RATED SPEED

1st version

Control Lever

position degrees: 36...44

Testing:

1st rack travel in: 12.20

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

rpm : 1135...1145 Speed

3rd rack travel in: 4.00

Speed rpm : 1160...1190 4th rack travel in: 1250

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control Lever

position degrees: 15...23

Setting point w/out bumper spring

rpm : 475 Rack travel in mm: 5.6

Testina:

rpm : 100 Speed Minimum rack trave: 19.00

rpm : 475

Rack travel in mm : 6.00...6.20

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rom hPa : 700 Pressure

: 13.20...13.30 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 11.10...11.30 2nd pressure hPa : 335 Rack travel in m: 12.80...12.90

3rd pressure hPa : 185

Rack travel in m: 11.50...11.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 120.0...124.0 1000 s: (117.0...127.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.20

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 125.0...145.0 1000 s: (120.0...150.0) Rack travel in mm: 19.00...21.00

LOW IDLE

rpm : 475 Speed

Rack travel in mm : 6.00...6.20 Del.quantity cm3/: 10.5...14.5 1000 s: (8.0...17.0)

cm3 : 6.00Spread

1000 s: (8.00)

Remarks:

The stop position of the control rod 56 must be easily reached with the stop

Lever

Start-of-delivery mark 10.5° cam angle after start of delivery cyl. 1

Note remarks

: MB 11,7 d 4 Test sheet : 23.03.90 Edition : 29.3.89 Replaces : ISO-4113 Test oil

Combination no. : 0 402 076 734

Injection pump

Pump designation : PES6P110A820LS3131-1

: 0 412 016 717 EP type number

Governor

Governor design. : RSV350..1100P0A487-9

: 0 421 833 316 Governer no.

Customer-spec. information

Customer : DAIMLER-BENZ

: OM447 Engine

: 168.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 0 681 343 009 assembly

Openina |

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.30...4.40 Prestroke mm : (4.25...4.45)

Rack travel in mm : 9.00...12.00

: 6-2-4-1-5-3 Firing order

: 0-60-120-180-240-300 Phasina

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

rpm: 1080 1st speed

Rack travel in mm : 11.00...11.10

Del.quantity cm3/: 13.5...13.7

100 s: (13.2...13.9)

Spread cm3 : 0.4

100 s: (0.8)

rpm : 350.02nd speed

Rack travel in mm: 6.8...7.0 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3) cm3 : 0.4 100 s: (0.7) Spread

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1080Speed

: 135.0...137.0 Del.quantity : (132.5...139.5) 1000

: 4.00 cm3 Spread

1000 : (8.00)

RATED SPEED

1st version

Control lever

position degrees: 95...103

Testina:

1st rack travel in: 10.00

rpm : 1130...1140 Speed 2nd rack travel in: 4.00 rpm : 1190...1220 Speed 4th rack travel in: 1350 rpm : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 69...77 Setting point w/out bumper spring : 350 Speed rpm Rack travel in mm: 6.9 Testing: : 100 Speed rom Minimum rack trave: 19.50 rpm : 350 Rack travel in mm : 6.80...7.00 Rack travel in mm : 2.00 : 400...440 Speed rpm SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 600 Del.quantity cm3/: 111.0...115.0 1000 s: (108.0...118.0) cm3 : 6.00Spread 1000 s: (9.00) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.00 rpm : 1130...1140 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0) LOW IDLE Speed rpm : 350Rack travel in mm : 6.80...7.00 Del.quantity cm3/: 14.0...20.0 1000 s: (11.0...23.0) Spread cm3 : 4.501000 s: (7.00) Remarks:

B18

Note remarks

Test sheet : DEE 10,1 i Edition : 01.02.90

Replaces : -

Test oil : ISO-4113

Combination no. : 0 402 076 735

Injection pump

Pump designation : PES6P110A720RS3242

EP type number : 0 412 016 731

Governor

Governor design. : RSV400...1050POA513-

1

Governer no. : 0 421 833 327

Customer-spec. information

Customer : JOHN DEERE

Engine : 6619AE03

1st version kW : 212.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 200...215

Test nozzle holder

assembly : 1 688 901 103

Opening |

pressure, bar : 207...210

Orifice plate

diameter mm : 0,7

Test Lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.45...3.55

: (3.40...3.60)

Rack travel in mm : 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 14.00...14.10

Del.quantity cm3/: 20.8...21.0

100 s: (20.5...21.2)

Spread cm3:0.4

100 s: (0.7)

2nd speed rpm : 400.0 Rack travel in mm : 6.8...7.0

Del.quantity cm3/: 4.0...4.5 100 s: (3.7...4.7)

Spread cm3 : 0.9 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 Speed rpm: 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1050 Aneroid pressure h: 800

Del.quantity : 208.0...210.0 1000 : (205.5...212.5)

cm3 : 4.00

1000 : (7.50)

RATED SPEED

Spread

1st version

Control Lever position degrees: 37...45 Testina: 1st rack travel in: 13.00 rpm : 1090...1100 2nd rack travel in: 4.00 Speed rpm : 1160...1170 3rd rack travel in: 4.00 rpm : 1170...1200 Speed 4th rack travel in: 1300 rpm : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 17...25 Setting point w/out bumper spring : 400 rpm Rack travel in mm: 6.4 Testing: : 100 Speed rpm Minimum rack trave: 19.00 : 400 rpm Rack travel in mm : 6.80...7.00 TORQUE CONTROL Torque control curve - 1st version rpm : 1050 1st speed Rack travel in m: 14.00...14.20 2nd speed rpm : 600 Rack travel in m: 14.20...14.30 Aneroid/Altitude Compensator Test 1st version Setting Speed rom : 500 Pressure hPa : 800 : 14.20...14.30 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 11.40...11.60 2nd pressure hPa : 170 Rack travel in m: 12.20...12.30 3rd pressure hPa : 350 Rack travel in m: 13.20...13.60 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 800

Del.quantity cm3/: 222.0...227.0 1000 s: (219.5...229.5) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 144.5...148.5 1000 s: (141.5...151.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 13.00 rpm : 1090...1100 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 145.0...175.0 1000 s: (140.0...180.0) Rack travel in mm : 20.00...21.00 LOW IDLE rpm : 400 Speed Rack travel in mm : 6.80...7.00 Del.quantity cm3/: 40.0...45.0 1000 s: (37.5...47.5) Spread cm3 : 9.001000 s: (12.00) Remarks:

: JOHN DEERE # RE42224
The stop position of the control rod
must be easily reached with the stop
lever

Start-of-delivery mark at 14° angular displacement of the cam after start of delivery of cylinder 1 with control-rod travel = 10.50 mm.

Speed

rom

: 600

Note remarks

Test sheet : DEE 7,6 g 9 Edition : 02.05.90

Replaces : -

Test oil : ISO-4113

Combination no. : 0 402 076 737

Injection pump

Pump designation : PES6P110A720RS3083-1

EP type number : 9 410 231 027

Governor

Governor design. : RSV475...1050P0A455-

4

Governer no. : 0 421 833 340

Customer-spec. information

Customer : JOHN DEERE

Engine : 6466AT014

1st version kW : 151.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 688 901 101

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0.6

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00X3.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.45...3.55

: (3.40...3.60)

Rack travel in mm : 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 13.1...13.3

100 s: (12.9...13.5)

Spread cm3: 0.4

100 s: (0.6)

2nd speed rpm : 475.0 Rack travel in mm : 6.0...6.2

Del.quantity cm3/ : 1.1...1.5

100 s: (0.9...1.7)

Spread cm3 : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 6.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1050

Del.quantity : 131.5...133.5

1000 : (129.5...135.5)

Spread cm3 : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 37...45

Testing:

1st rack travel in: 10.70 rpm : 1090...1100 Speed

2nd rack travel in: 4.00

rpm : 1195...1205 Speed

3rd rack travel in: 4.00

rpm : 1210...1240 Speed

4th rack travel in: 1300

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 23...31

Setting point w/out bumper spring

: 475 rpm Rack travel in mm: 5.6

Testing:

rpm : 100 Speed Minimum rack trave: 19.00 : 475 rpm

Rack travel in mm : 6.00...6.20

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 11.70...11.80 ad speed rpm : 700

2nd speed

Rack travel in m: 12.00...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

: 700 Speed rpm

Del.quantity cm3/: 136.5...140.5 1000 s: (134.5...142.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.70

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 155.0...175.0

1000 s: (150.0...180.0) Rack travel in mm : 19.00...21.00

LOW IDLE

rpm : 475 Speed

Rack travel in mm : 6.00...6.20 Del.quantity cm3/: 11.0...15.0

1000 s: (9.0...17.0)

Remarks:

Spread

: JOHN DEERE # RE44340

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

cm3 : 6.00

1000 s: (8.00)

Starting/full-load transition speed from holding magnet = 450 1/min.

Start-of-delivery mark 12° cam angle after start of delivery cyl. 1.

822

Note remarks

: DEE 10,1 i Test sheet : 02.05.90 Edition

Replaces

: ISO-4113 Test oil

: 0 402 076 738 Combination no.

Injection pump

Pump designation : PES6P110A720RS3251 : 0 412 016 733

EP type number

Governor : RSV400...1050P0A513-Governor design.

: 0 421 833 327 Governer no.

Customer-spec. information

Customer : JOHN DEERE

: 6619AF03 Engine

: 212.0 : 2100 1st version kW Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 200...215

Test nozzle holder

: 1 688 901 103 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,7

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

REGINNING OF DELIVERY

Test pressure, bar: 27...29

: 3.45...3.55 Prestroke mm

: (3.40...3.60)

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. ; 1

BASIC SETTING

rpm: 10501st speed

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 19.6...19.8

100 s: (19.4...20.0)

cm3 : 0.4Spread

100 s: (0.6)

2nd speed rpm : 400.0 Rack travel in mm : 5.3...5.5 Del.quantity cm3/ : 3.2...3.7

100 s: (3.0...3.9)

cm3 : 0.6

Spread 100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

> Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed Aneroid pressure h: 900

: 196.5...198.5 Del.guantity

1000 : (194.5...200.5)

cm3 : 4.00 Spread

: (6.50) 1000

RATED SPEED

1st version

Control lever position degrees: 40...48 Testing: 1st rack travel in: 11.70 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 rpm : 1160...1170 Speed 3rd rack travel in: 4.00 rpm : 1155...1185 Speed 4th rack travel in: 1300 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 19...27 Setting point w/out bumper spring rpm : 400 Rack travel in mm: 4.9 Testina: rpm : 100 Speed Minimum rack trave: 19.00 rpm : 400 TORQUE CONTROL 1st speed

Rack travel in mm : 4.80...5.00 Torque control curve – 1st version st speed rpm : 1050 Rack travel in m: 12.70...12.80 2nd speed rpm : 600

Rack travel in m: 13.70...13.80

Aneroid/Altitude Compensator Test

1st version Setting : 500 Speed rpm hPa : 900 Pressure : 13.70...13.80 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -Rack travel in m: 9.80...10.00

2nd pressure hPa : 225 Rack travel in m: 10.90...11.00

3rd pressure hPa : 475

Rack travel in m: 12.50...12.90

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 900 Speed rpm : 600 Del.quantity cm3/: 236.5...240.5 1000 s: (234.5...242.5) Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 144.0...148.0 1000 s: (142.0...150.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.70

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 180.0...210.0 1000 s: (175.0...215.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

rpm : 400 Speed Rack travel in mm : 5.30...5.50 Del.quantity cm3/: 32.0...37.0 1000 s: (30.0...39.0)

cm3 : 6.00Spread 1000 s: (8.00)

Remarks:

: JOHN DEERE # RE42224 Starting/full-load transition speed from holding magnet = 450 1/min.

Start-of-delivery mark at 14° angular displacement of the cam after start of delivery of cylinder 1 with control-rod travel = 10.50 mm.

Note remarks

Test sheet : BAO 14,9 a Edition : 01.02.90 Replaces : 15.12.89 Test oil : ISO-4113

Combination no. : 0 402 630 802

Injection pump

Pump designation : PE12P12OA12ORS7192 EP type number : 0 412 620 818

Governor

Governor design. : RQV325...1500PA930

Governer no. : 0 421 813 804

Customer—spec. information Customer : BAUDOUIN

Engine : 12 F 120 SR

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0.8

Test Lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50

: (4.35...4.55)

Rack travel in mm : 9.00...12.00

Firing order : 1- 12- 9- 5- 3- 8- 11- 4- 2- 10- 7- 6

Phasing : 0-45-60-105-120-165-180-225-240-285-300-

345

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

BASIC SETTING

1st speed rpm: 1500

Rack travel in mm : 11.50...11.60

Del.quantity cm3/: 16.9...17.1

100 s: (16.6...17.4)

Spread cm3:0.5

100 s: (0.9)

2nd speed rpm : 325.0 Rack travel in mm : 4.3...4.7

Del.quantity cm3/: 1.5...2.1 100 s: (1.2...2.4)

Spread cm3: 0.8

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm: 300

travel mm : 0.60...1.00 nd speed rpm : 700

2nd speed rpm : 700 travel mm : 2.90...3.30

3rd speed rpm : 1500

travel mm : 8.10...8.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1700

Rack travel in mm : 4.50...7.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1500

Aneroid pressure h: 900

Del.quantity : 169.0...171.0

1000 : (166.0...174.0) cm3 : 5.00

Spread cm3 : 5.00 1000 : (9.00)

RATED SPEED

1st version Control lever position degrees: 116...124 Testing: 1st rack travel in: 10.50 Speed rpm : 1540...1550 2nd rack travel in: 4.00 rpm : 1630...1660 Speed 4th rack travel in: 1750 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 78...86 Testing: rpm : 100 Speed Minimum rack trave: 6.00 rpm : 325 Rack travel in mm : 4.40...4.60 CONSTANT REGULATION rpm : 320...460 Speed Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 900 Pressure Rack travel mm : 11.50...11.60 Measurement Speed $1/\min : 500$ 1st pressure hPa : -Rack travel in m: 10.00...10.10 2nd pressure hPa : 400 Rack travel in m: 11.00...11.10 3rd pressure hPa : 360 Rack travel in m: 10.40...10.60 START CUT-OUT 1/min: 270 (290) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: rpm : 500 Speed

1st version 1mm rack travel less than full load rack tr: 10.50 Speed rpm : 1540...1550 Remarks:

BREAKAWAY

Del.quantity cm3/: 127.0...131.0 1000 s: (124.0...134.0)

Note remarks

Test sheet : BAO 31,8 c3 Edition : 01.02.90

Replaces

Test oil : ISO-4113

Combination no. : 0 402 630 805

Injection pump

Pump designation : PE12P12OA12ORS7106 EP type number : 0 412 620 800

Governor

Governor design. : RQV350...900PA935-1

Governer no. : 0 421 813 820

Customer—spec. information Customer : BAUDOUIN

Engine : V12P15-2

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 074

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70

: (3.55...3.75)

Rack travel in mm : 9.00...12.00

Firing order : 1- 12- 9- 4- 5- 8-11- 2- 3- 10- 7- 6

Phasing : 0-45-60-105-120-165-180-225-240-285-300-

345

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 12.00...12.10

Del.guantity cm3/: 33.9...34.1

100 s: (33.6...34.4)

Spread cm3: 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 4.5...4.7 Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350 travel mm : 1.30...1.70

2nd speed rpm : 500

travel mm : 3.00...3.60

3rd speed rpm : 700 travel mm : 5.30...5.90

4th speed rpm: 900

travel mm : 7.70...7.90

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm: 930

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 900

Del.quantity : 339.0...341.0 1000 : (336.0...344.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 118...126

Testing:

1st rack travel in: 11.00 rpm : 940...950 Speed 2nd rack travel in: 4.00

rpm : 1000...1030 Speed

4th rack travel in: 1150 Speed rpm: 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 82...90

Testing:

: 100 Speed rpm Minimum rack trave: 6.10 rpm : 350 Speed

Rack travel in mm : 4.50...4.70

CONSTANT REGULATION

rpm : 330...450 Speed

START CUT-OUT

1/min: 270 (290) Speed

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.00 rpm : 940...950 Speed

Remarks:

Note remarks

Test sheet : SCA 11,1 i2 : 12.01.90 Edition

Replaces

: ISO-4113 Test oil

: 0 402 646 869 Combination no.

Injection pump

: PE6P120A720RS70200 Pumo designation : 0 412 626 831 EP type number

Governor

: RQV200...1000PA539 Governor design.

-10

: 0 421 813 726 Governer no.

Customer-spec. information Customer : SCANIA

Engine : DSC11 17

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

: (4.95...5.15)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasina

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 20.1...20.3

100 s: (19.8...20.6)

Spread cm3 : 0.6

100 s: (0.9)

rpm : 225.0 2nd speed

Rack travel in mm: 4.5...4.9

Del.quantity cm3/: 1.5...1.9

100 s: (-)

cm3 : 0.3 Spread

100 s: (0.6)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 225 1st speed

: 1.20...1.60 travel mm

rpm : 350 2nd speed

travel mm : 2.30...2.90

rpm : 650 3rd speed

travel mm : 4.40...5.00

rpm : 10454th speed

: 8.40...8.60 travel mm

rpm : 1150 5th speed

: 9.70...10.10 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1050

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

Aneroid pressure h: 900

Del.quantity : 201.0...206.0)

cm3 : 6.00 1000 : (9.00) Spread

RATED SPEED

1st version Control lever

position degrees: 58...66

Testing:

1st rack travel in: 11.80

Speed rpm : 1040...1050 2nd rack travel in: 4.00

Speed rpm : 1135...1165 4th rack travel in: 1300

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 6...14

Testing:

: 100 Speed rpm Minimum rack trave: 6.10 rpm : 225

Rack travel in mm : 4.50...4.70 Rack travel in mm : 2.00

rpm : 340...400 Speed

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm hPa : 900 Pressure

: 12.80...12.90 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.50...10.90 2nd pressure hPa : 440

Rack travel in m: 12.50...12.60 3rd pressure hPa : 250

Rack travel in m: 11.10...11.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 rpm : 1000 Speed

Del.quantity cm3/: 193.0...201.0 1000 s: (191.0...203.0)

Aneroid pressure h: -: 500 Speed rpm

Del.quantity cm3/: 150.0...154.0

1000 s: (148.0...156.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80

rpm : 1040...1050 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 275.0...325.0

1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm: 225
Rack travel in mm: 4.50...4.70

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO diaphragm.

For comb. with letter index see VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania on November 14, 1989

Start of delivery - engine: 15° before

Firing sequence of engine: 1-5-3-6-2-4.

Note remarks

: MB 21,9 j 1 : 30.3.90 Test sheet Edition : 24.11.89 Replaces Test oil : ISO-4113

Combination no. : 0 402 670 804

Injection pump

Pump designation : PE12P120A320LS7813-1

: 0 412 620 811 EP type number

Governor

Governor design. : RSV350...750P0A825-5

: 0 421 833 277 Governer no.

Customer-spec. information

: DAIMLER-BENZ Customer

: OM 444 LA Engine

: 441.0 1st version kW : 1500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 150...170

Test nozzle holder

: 1 688 901 019 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35) Rack travel in mm : 19.00...21.00

: 12- 1- 5- 9- 8- 3-4- 11- 10- 2- 6- 7 Firing order

: 0-45-60-105-120-165-Phasing

180-225-240-285-300-

345

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 16.50...16.60

Del.guantity cm3/: 28.0...28.2

100 s: (27.7...28.5)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 350.0 2nd speed Rack travel in mm: 5.1...5.3 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3) cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

: 280.0...282.0 Del.quantity

1000 : (277.0...285.0)

: 5.00 Spread cm3

: (9.00) 1000

RATED SPEED

1st version

Control lever

position degrees: 20...28

Testing:

1st rack travel in: 15.50 rpm : 750...755 Speed

2nd rack travel in: 4.00

Speed rpm : 775...788 4th rack travel in: 900

rpm : 0.30...1.70Speed

LOW IDLE 1 Control lever

position degrees: 9...17

Setting point w/out bumper spring

: 350 rpm Rack travel in mm: 5.2 : 350 Speed rpm

Rack travel in mm : 5.10...5.30

SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 15.50 Speed rpm : 750...755 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 260.0...280.0 1000 s: (256.0...284.0)

Remarks:

Observe VDT-I-420/120

APPLICATION

Generator

Note remarks

: MAC 11,1 h : 22.3.90 Test sheet Edition

Replaces

Test oil : ISO-4113

: 0 402 736 633 Combination no.

Injection pump

Pump designation : PES6P110A720/3RS6001

Governor

: RQV300/600...1050PA Governor design.

409KR

Cust. part no.

Customer-spec. information Customer : MACK

Engine : FTA 676

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 40...45

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.5

Openina

pressure, bar : 300...303

: 9 681 230 710 Test lines

Outside diameter x Wall thickness

: 6.35x1.70x915.00 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm: 10.85

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 13.80...13.95

Del.quantity cm3/: 17.25...17.45

100 s: (-)

cm3 : 0.4Spread

100 s: (-)

2nd speed rpm : 300

Rack travel in mm : 4.30...4.40 Del.quantity cm3/: 1.50...2.50

100 s: (-)

cm3 : 0.4Spread

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1070 Speed

Rack travel in mm : 16.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

: 1000 Speed rpm

: 172.5...174.5 Del.quantity

1000 : (169.5...177.5)

RATED SPEED

1st version Control lever

position degrees: 60.5...65.5

Testing:

1st rack travel in: 12.90

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

rpm : 1190...1220 Speed

4th rack travel in: 1280

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 16...21

Testing:

: 250 Speed rom Minimum rack trave: 9.80 : 400 Speed rpm

Rack travel in mm : 3.80...5.20 Rack travel in mm : 2.00 : 680...740 Speed rpm

TORQUE CONTROL Torque control curve - 1st version rpm : 1000 1st speed Rack travel in m: 13.85...13.95 rpm : 800 2nd speed Rack travel in m: 14.10...14.20 rpm : 600 3rd speed Rack travel in m: 14.75...14.85 rpm : 500 4th speed Rack travel in m: 14.35...14.45 FUEL DELIVERY CHARACTERISTICS 1st version : 800 Speed rpm Del.quantity cm3/: 188.0...194.0 1000 s: (187.0...195.0) Speed rpm : 600 Del.quantity cm3/: 218.0...222.0 1000 s: (116.0...224.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.90 rpm : 1090...1100 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 120.0...180.0 1000 s: (-) Rack travel in mm: 11.50...11.60 LOW IDLE rpm : 300 Speed Del.quantity cm3/: 15.0...25.0 1000 s: (-) Remarks: See VDT-I-MAC 002 PLE dimension = 0.740'' - 0.820''The test specifications apply to testing of the injection-pump assembly with the genuine engine/nozzle-and-holder assembly

Note remarks

Test sheet : MAC 11,1 c
Edition : 02.05.90
Replaces : 31.10.89
Test oil : ISO-4113

Combination no. : 0 402 746 827

Injection pump

Pump designation : PES6P120A720RS7148 EP type number : 0 412 726 810

Governor

Governor design. : RQV325...875PA848-7K

Governer no. : 0 421 815 176

Customer-spec. information

Customer : MACK TRUCKS INC.

Engine : EM6 300L 4VH

1st version kW : 224.0 Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

assembly : 1 688 901 101

Opening.

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85

: (2.70...2.90)

Rack travel in mm: 6.00...8.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 10.50 & maximum rack tra: 16.85

Difference ° CS : 4.70...5.90

BASIC SETTING

1st speed rpm: 875

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 19.9...20.1

100 s: (19.6...20.4)

Spread cm3: 0.5

100 s: (0.9)

2nd speed rpm: 325.0 Rack travel in mm: 4.7...4.9

Del.quantity cm3/: 3.9...4.5 100 s: (3.7...4.7)

Spread cm3 : 0.8 100 s: (1.2)

(B) Setting of injection pump with governor

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed rpm: 450

travel mm : 2.50...2.80

3rd speed rpm : 600

travel mm : 4.10...4.30

4th speed rpm : 875

travel mm : 6.90...7.10

5th speed rpm : 1000

travel mm : 8.20...8.60

FULL LOAD DELIV. AT FULL LOAD STOP

Rack travel mm : 16.50...16.70 1st version rpm : 875 Speed Aneroid pressure h: 1200 Measurement 1/min: 510 : 199.0...201.0 Speed Del.quantity 1000 : (196.0...204.0) : 5.00 1st pressure hPa : -Spread cm3 Rack travel in m: 8.50...8.90 1000 : (9.00) 2nd pressure hPa : 370 Rack travel in m: 10.70...10.80
3rd pressure hPa : 710
Rack travel in m: 14.60...15.00 RATED SPEED 1st version Control Lever FUEL DELIVERY CHARACTERISTICS position degrees: 55...63 Testing: 1st version 1st rack travel in: 10.10 rpm : 915...925 Aneroid pressure h: 1200 Speed Speed rpm : 510 Del.quantity cm3/: 299.0...305.0 2nd rack travel in: 4.00 rpm : 1000...1030 Speed 1000 s: (296.0...308.0) 4th rack travel in: 1150 cm3 : 8.00rpm : 0.00...1.00Spread Speed 1000 s: (12.0) Aneroid pressure h: -LOW IDLE 1 Speed rpm : 400 Control lever Del.quantity cm3/: 152.5...156.5 position degrees: 7...15 1000 s: (150.5...158.5) Setting point w/out bumper spring rpm : 325 Rack travel in mm: 4.8 BREAKAWAY Testing: 1st version Speed rpm : 275 Minimum rack trave: 6.20 1mm rack travel less than rpm : 325 Speed Rack travel in mm : 4.70...4.90 full load rack tr: 10.10 rpm : 915...925 Speed CONSTANT REGULATION rpm : 325...520 STARTING FUEL DELIVERY Speed TORQUE CONTROL Speed : 100 Dimension a mm :? rpm Del.quantity cm3/: 140.0...160.0 Torque control curve - 1st version 1000 s: (135.0...165.0) 1st speed rpm : 875 Rack travel in mm : 8.50...8.90 Rack travel in m: 11.10...11.20 2nd speed rpm : 510 Rack travel in m: 16.50...16.70 d speed rpm : 700 LOW IDLE 3rd speed rpm Speed rpm : 325 Rack travel in mm : 4.70...4.90 Rack travel in m: 13.30...13.50 rpm : 600 4th speed Del.quantity cm3/: 39.0...45.0 Rack travel in m: 15.40...15.60 1000 s: (37.0...47.0) 5th speed rpm : 450 cm3 : 8.00 Rack travel in m: < 16.60 Spread 1000 s: (12.00) Aneroid/Altitude Remarks: Compensator Test : MACK # 313GC5174-P2 Because of flattening, set the spring 1st version preload on new delivery-valve holders Setting to 2.9...3.1 mm. beed : 510 man

Pressure

hPa : 1200

Note remarks

: UNI 9,5 e Test sheet : 16.02.90 Edition : 24.2.89 Replaces : ISO-4113 Test oil

Combination no. : 0 402 746 834

Injection pump

Pump designation : PES6P120A720RS7154 : 0 412 726 811 EP type number

Governor

Governor design. : RQV275...1100PA888K Governer no. : 0 421 815 191

Customer-spec. information : IVECO-UNIC Customer

: 8460.41.102 Engine

: 235.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm : (4.95...5.15)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 11.60...11.70

Del.quantity cm3/: 19.8...20.0

100 s: (19.5...20.3)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 275.0Rack travel in mm: 4.9...5.1 Del.quantity cm3/: 2.0...2.6

100 s: (1.7...2.9)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 275 1st speed

: 1.20...1.40 travel mm rpm : 4502nd speed

: 3.00...3.80 travel mm rpm : 800 3rd speed

: 6.20...6.60 travel mm

rpm : 1100 4th speed

: 9.70...9.90 travel mm

rpm : 1200 5th speed : 13.00...14.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1125 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed Aneroid pressure h: 1200 Del.quantity : 198.0...200.0 1000 : (195.0...203.0) cm3 : 5.00 Spread 1000 : (9.00) RATED SPEED 1st version Control Lever position degrees: 63...71 Testing: 1st rack travel in: 10.60 Speed rpm: 1140...1150 2nd rack travel in: 4.00 rpm : 1200...1230 Speed 4th rack travel in: 1350 Speed rpm : 0.00...1.00LOW IDLE 1 Control Lever position degrees: 13...21 Testing: rpm : 100 Speed Minimum rack trave: 6.50 rpm : 275 Rack travel in mm : 4.90...5.10 CONSTANT REGULATION rpm : 280...400 Speed TORQUE CONTROL Dimension a mm : 0.80 Torque control curve - 1st version rpm : 850 1st speed Rack travel in m: 12.00...12.10 ad speed rpm : 1100 2nd speed Rack travel in m: 11.60...11.70 rpm : 950 3rd speed Rack travel in m: 11.80...12.10 4th speed rpm : 750 Rack travel in m: 11.80...12.10 rpm : 400 5th speed Rack travel in m: 11.20...11.60 Aneroid/Altitude Compensator Test 1st version Setting : 850 Speed rpm hPa : 1200 Pressure : 12.00...12.10 Rack travel mm

Measurement 1/min: 850 Speed 1st pressure hPa : -

Rack travel in m: 9.00...9.40 2nd pressure hPa : 515 Rack travel in m: 11.30...11.40 3rd pressure hPa : 305 Rack travel in m: 9.50...9.70 START CUT-OUT 1/min : 195 (215) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 rpm : 850 Del.quantity cm3/: 212.0...218.0 1000 s: (209.0...221.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 127.0...129.0 1000 s: (124.0...132.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.60 rpm : 1140...1150 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 120.0...150.0 1000 s: (116.0...154.0) Remarks:

Note remarks

Test sheet : CUM 8,3 D 2
Edition : 23.04.90
Replaces : 20.05.88
Test oil : ISO-4113

Combination no. : 0 403 436 103

Injection pump

Pump designation : PES6MW100/120RS1143

EP type number : 0 413 406 137

Governor

Governor design. : RQV350...1100MW82

Governer no. : 0 420 083 130

Customer—spec. information Customer : CUMMINS/US

Engine : 6 CTA-830

1st version kW : 186.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 017

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0.6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.05...3.15 : (3.00...3.20)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 15.0...15.2

100 s: (14.8...15.4)

Spread cm3: 0.3

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 7.2...7.3 Del.quantity cm3/ : 1.6...2.0

100 s: (1.4...2.2)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1240

travel mm : 8.80...9.20 2nd speed rpm : 1140

travel mm : 7.80...8.00

3rd speed rpm : 700

travel mm : 3.80...4.40

4th speed rpm: 350

travel mm : 1.20...1.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1100 Aneroid pressure h: 900

Del.quantity : 150.0...152.0 1000 : (148.0...154.0)

1000 : (148.0...154.0) cm3 : 3.50

Spread cm3 : 3.50 1000 : (6.00)

RATED SPEED

1st version

Control lever position degrees: 44...52 Testina: 1st rack travel in: 11.70 rpm : 1150...1160 Speed 2nd rack travel in: 4.00 rpm : 1240...1270 Speed 4th rack travel in: 1330 rpm : 0.00...1.00Speed LOW IDLE 1 Control Lever position degrees: 13...21 Setting point w/out bumper spring rpm Rack travel in mm: 7.2 Testina: : 100 Speed rpm Minimum rack trave: 9.00 : 350 rpm Rack travel in mm : 7.20...7.30 CONSTANT REGULATION Speed rpm : 360...500 TORQUE CONTROL Torque control curve - 1st version rpm : 1100 1st speed Rack travel in m: 12.70...12.80 : 700 2nd speed rom Rack travel in m: 13.40...13.50 : 900 3rd speed rpm Rack travel in m: 12.90...13.20 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : -Pressure : 9.90...10.10 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : 300 Rack travel in m: 10.80...10.90

2nd pressure hPa : 520 Rack travel in m: 12.20...12.50 3rd pressure hPa : 900 Rack travel in m: 13.60...13.70

1/min: 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 900 rpm : 700 Speed

Del.quantity cm3/: 159.0...161.0 1000 s: (157.0...163.0) Spread cm3 : 5.00

1000 s: (7.0) Aneroid pressure h: -

Speed rpm: 500 Del.quantity cm3/: 88.0...90.0 1000 s: (86.0...92.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.70 rpm : 1150...1160 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 205.0...225.0

1000 s: (202.0...228.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm Rack travel in mm : 7.20...7.30

Del.quantity cm3/: 16.0...20.0 1000 s: (14.0...22.0)

cm3 : 3.50Spread 1000 s: (5.50)

Remarks:

Start-of-delivery mark/lock = 8.0° angular displacement of the cam after start of delivery of cylinder 1.

Speed

START CUT-OUT

Note remarks

: CUM 8,3 D 3 : 23.04.90 Test sheet Edition : 07.07.89 Replaces Test oil : ISO-4113

: 0 403 436 104 Combination no.

Injection pump

Pump designation : PES6MW100/120RS1143 : 0 413 406 137 EP type number

Governor

Governor design. : RQV350...1200MW82-1

: 0 420 083 153 Governer no.

Customer-spec. information : CUMMINS/US Customer

: 6 CTA-830 Engine

: 179.0 1st version kW Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.15...3.25 Prestroke mm

: (3.10...3.30)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 13.6...13.8

100 s: (13.4...14.0)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 7.1...7.2 Del.quantity cm3/: 1.2...1.6 100 s: (1.0...1.8)

cm3 : 0.3 Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1250

: 7.60...7.80 travel mm

rpm : 1350 2nd speed

travel mm : 8.60...9.00

3rd speed

rpm : 350 : 1.20...1.60 travel mm

rpm : 800 4th speed

: 4.90...5.50 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1200 Speed Aneroid pressure h: 700

: 136.0...138.0 Del.quantity

1000 : (134.0...140.0)

: 3.50 cm3 Spread

1000 : (6.00)

RATED SPEED

1st version

Control lever position degrees: 42...50 FUEL DELIVERY CHARACTERISTICS Testina: 1st rack travel in: 11.00 Speed rpm : 1250...1260 2nd rack travel in: 4.00 1st version Aneroid pressure h: 700 rpm : 1375...1405 Speed rpm : 750 Del.quantity cm3/: 138.5...140.5 Speed 4th rack travel in: 1455 1000 s: (135.5...143.5) rpm : 0.00...1.00Speed cm3 : 5.00Spread 1000 s: (7.0) LOW IDLE 1 Aneroid pressure h: -Control lever Speed rpm : 500 Del.quantity cm3/: 108.0...110.0 1000 s: (106.0...112.0) position degrees: 11...19 Setting point w/out bumper spring : 350 rpm Rack travel in mm: 7.1 **BREAKAWAY** Testing: Speed rpm : 100 1st version Minimum rack trave: 9.00 rpm : 350 1mm rack travel less than Rack travel in mm : 7.10...7.20 full load rack tr: 11.00 rpm : 1250...1260 Speed CONSTANT REGULATION rpm : 360...500 Speed STARTING FUEL DELIVERY TORQUE CONTROL Torque control curve - 1st version rpm : 1200 : 100 Speed rpm 1st speed Del.guantity cm3/: 205.0...225.0 Rack travel in m: 12.00...12.10 1000 s: (202.0...228.0) : 750 2nd speed rpm Rack travel in m: 12.50...12.60 Rack travel in mm : 19.00...21.00 rpm : 1000 3rd speed Rack travel in m: 12.00...12.10 LOW IDLE : 900 4th speed rpm Speed rpm : 350 Rack travel in mm : 7.10...7.20 Rack travel in m: 12.10...12.30 Del.quantity cm3/: 12.0...16.0 Aneroid/Altitude Compensator Test 1000 s: (10.0...18.0) cm3 : 3.50 Spread 1000 s: (5.50) 1st version Remarks: Settina : 500 Speed rpm hPa : -Pressure : 11.00...11.10 Start-of-delivery mark at 10° cam Rack travel mm rotation angle after start of delivery, cylinder 1 Measurement 1/min: 500 Speed 1st pressure hPa : 390 Rack travel in m: 11.40...11.50 2nd pressure hPa : 480 Rack travel in m: 11.90...12.20 3rd pressure hPa : 700 Rack travel in m: 12.50...12.60 START CUT-OUT

1/min: 220 (240)

Speed

Note remarks

: CUM 8,3 F 1 : 23.04.90 Test sheet Edition : 10.02.90 Replaces : ISO-4113 Test oil

: 0 403 436 105 Combination no.

Injection pump

Pump designation : PES6MW100/120RS1169

: 0 413 406 153 EP type number

Governor

Governor design. : RQV350...1200MW78-1

: 0 420 083 156 Governer no.

Customer—spec. information Customer : CDC

Engine : 6CTA830

: 197.0 1st version kW Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening

: 207...210 pressure, bar

Orifice plate

: 0,6 diameter mm

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.00...3.10 Prestroke mm

: (2.95...3.15)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rom: 1200

Rack travel in mm : 11.90...12.00

Del.guantity cm3/: 14.1...14.3

100 s: (13.9...14.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 5.6...5.8 Del.quantity cm3/ : 1.6...2.0

100 s: (1.4...2.2)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 13501st speed

: 8.60...9.00 travel mm rpm : 1250 2nd speed

: 7.60...7.80 travel mm

rpm : 800 3rd speed : 4.90...5.50 travel mm

rpm : 350 4th speed

travel mm : 1.20...1.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1200 Speed

Aneroid pressure h: 600

Del.quantity : 141.0...143.0

1000 : (139.0...145.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control Lever

position degrees: 42...50

Testing:

1st rack travel in: 10.90

rpm : 1240...1250 Speed 2nd rack travel in: 4.00 Speed rpm : 1385...1415 4th rack travel in: 1500 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 10...18 Setting point w/out bumper spring rpm Rack travel in mm: 5.7 Testing: : 100 Speed rpm Minimum rack trave: 7.50 rpm : 350 Rack travel in mm : 5.60...5.80 CONSTANT REGULATION rpm : 370...500 Speed Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rom hPa : 300 Pressure : 11.00...11.10 Rack travel mm Measurement Speed $1/\min : 500$ 1st pressure hPa : -Rack travel in m: 10.70...10.80 2nd pressure hPa : 375
Rack travel in m: 11.50...11.80 3rd pressure hPa : 600 Rack travel in m: 11.90...12.00 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 600 : 750 Speed rpm Del.quantity cm3/: 137.5...141.5

1000 s: (135.0...143.0) cm3 : 5.00 Spread 1000 s: (7.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 113.5...115.5 1000 s: (111.5...117.5) C17

cm3 : 3.50Spread 1000 s: (6.00)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.90

rpm : 1240...1250 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/ : 218.0...228.0 1000 s: (215.0...231.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350 Rack travel in mm : 5.60...5.80

Del.quantity cm3/: 16.0...20.0 1000 s: (14.0...22.0)

cm3 : 3.50

Spread 1000 s: (5.50)

Remarks:

Start-of-delivery mark 10.5° cam angle after start of delivery cyl. 1

Note remarks

: CUM 8,3 D 5 Test sheet : 19.03.90 Edition : 24.10.88 Replaces : TSO-4113 Test oil

: 0 403 436 106 Combination no.

Injection pump

Pump designation : PES6MW100/120RS1143

EP type number : 0 413 406 137

Governor

Governor design. : RQV350...1100MW78-2

: 0 420 083 160 Governer no.

: 3915907 Cust. part no.

Customer-spec. information : CUMMINS/US Customer

: 6 CTA-8.3 Engine

: 179.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Openina (

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 014 Test lines

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.05...3.15 Prestroke mm : (3.00...3.20)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Phasing Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 12.70...12.80

Del.guantity cm3/: 15.0...15.2

100 s: (14.8...15.4)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 7.3...7.5

Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.2)

cm3 : 0.3

Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1210 1st speed

: 9.00...9.40 travel mm

rpm : 1100 2nd speed

: 7.90...8.10 travel mm

: 550 3rd speed rpm

: 3.00...3.60 travel mm

: 350 4th speed rpm

: 1.20...1.60 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

Aneroid pressure h: 900

: 150.0...152.0 Del.quantity 1000 : (148.0...154.0)

: 3.50 cm3 Spread

: (6.00) 1000

1st version Control lever

position degrees: 44...52

Testina:

1st rack travel in: 11.70 rpm : 1140...1150 Speed

2nd rack travel in: 4.00

rpm : 1230...1260 Speed

4th rack travel in: 1330

rpm : 0.00...1.00Speed

LOW IDLE 1 Control Lever

position degrees: 13...21

Setting point w/out bumper spring

rpm : 350 Rack travel in mm: 7.4

Testing:

: 100 Speed rpm Minimum rack trave: 9.00 rpm : 350

Rack travel in mm : 7.30...7.50

CONSTANT REGULATION

rpm : 360...550 Speed

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm hPa : -Pressure

: 9.60...9.70 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : 300 Rack travel in m: 10.80...10.90

2nd pressure hPa : 520 Rack travel in m: 11.90...12.20

3rd pressure hPa : 900

Rack travel in m: 12.70...12.80

START CUT-OUT

1/min: 270 (280) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 76.0...78.0

1000 s: (74.0...80.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 205.0...225.0

1000 s: (202.0...228.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350 Rack travel in mm : 7.30...7.50 Del.quantity cm3/ : 16.0...20.0

1000 s: (13.5...22.5) cm3 : 3.50

Spread 1000 s: (5.50)

Remarks:

: C.D.C. # 3915907

Start-of-delivery mark/lock = 8.0° angular displacement of the cam after start of delivery of cylinder 1.

Note remarks

Test sheet : CUM 8,3 D13 Edition : 19.03.90 : 07.02.89 Replaces : ISO-4113 Test oil

: 0 403 436 106 Combination no.

Injection pump

Pump designation : PES6MW100/120RS1143

: 0 413 406 137 EP type number

Governor

: RQV350...1100MW78-2 Governor design.

Governer no. : 0 420 083 160

: 3908567 Cust. part no.

Customer-spec. information : CUMMINS/US Customer

: 6 CTA-8.3 Engine

: 179.0 1st version kW Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 Di7 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.05...3.15 Prestroke mm

: (3.00...3.20)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm : 11001st speed

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 15.0...15.2

100 s: (14.8...15.4)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 7.3...7.5

Del.quantity cm3/: 1.6...2.0

100 s: (1.3...2.2)

cm3 : 0.3Spread

100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1240

8,80...9.20 travel mm

rpm : 1140 2nd speed

: 7.80...8.00 travel mm

rpm : 700 3rd speed

: 3.80...4.40 travel mm

rpm : 350 4th speed

travel mm : 1.20...1.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed Aneroid pressure h: 900

: 150.0...152.0 Del.quantity

1000 : (148.0...154.0)

: 3.50 cm3 Spread

1000 : (6.00)

1st version Control lever

position degrees: 44...52

Testing:

1st rack travel in: 11.70

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

rpm : 1230...1260 Speed

4th rack travel in: 1330

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 13...21

Setting point w/out bumper spring

rpm : 350° Speed Rack travel in mm: 7.4

Testing:

Speed : 100 rpm Minimum rack trave: 9.00 rpm : 350 Speed

Rack travel in mm : 7.30...7.50

CONSTANT REGULATION

Speed rpm : 360...550

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm Pressure hPa : -

: 9.60...9.70 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : 300
Rack travel in m: 10.80...10.90
2nd pressure hPa : 520
Rack travel in m: 11.90...12.20
3rd pressure hPa : 900

Rack travel in m: 12.70...12.80

START CUT-OUT

1/min: 270 (280) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 76.0...78.0 1000 s: (74.0...80.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

: 100 Speed rom

Del.quantity cm3/: 205.0...225.0 1000 s: (202.0...228.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350

Rack travel in mm : 7.30...7.50 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) Spread cm3: 3.50

1000 s: (5.50)

Remarks:

: C.D.C. # 3908567

Start-of-delivery mark/lock = 8.0° angular displacement of the cam after start of delivery of cylinder 1.

Note remarks

Test sheet : CUM 8,3 D 4 : 23.04.90 : 30.09.88 Edition Replaces : ISO-4113 Test oil

Combination no. : 0 403 436 107

Injection pump

: PES6MW100/120RS1143 Pump designation

: 0 413 406 137 EP type number

Governor

Governor design. : RQV350...1100MW82-2

Governer no. : 0 420 083 161

Cust. part no. : 3915168

Customer-spec. information : CUMMINS/US Customer

Engine : 6 CTA

1st version kW : 186.0 : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.05...3.15 Prestroke mm

: (3.00...3.20)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm : 11001st speed

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 15.2...15.4

100 s: (15.0...15.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 7.2...7.4 Del.quantity cm3/: 1.6...2.0

100 s: (1.4...2.2)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

 rpi_{i1} : 1250 1st speed

: 9.00...9.40 travel mm

: 1140 2nd speed rpm

: 7.80...8.00 travel mm

: 700 3rd speed rpm

travel mm : 3.80...4.40

4th speed : 350 rpm

: 1.20...1.60 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

: 152.0...154.0 Del.quantity

1000 : (150.0...156.0)

: 3.50 Spread cm3

1000 : (6.00)

1st version Control lever position degrees: 42...50 Testina: 1st rack travel in: 11.80 Speed rpm : 1140...1150 2nd rack travel in: 4.00 rpm : 1235...1265 Speed 4th rack travel in: 1400 rom : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 12...20 Setting point w/out bumper spring rpm Rack travel in mm: 7.3 Testing: Speed rom : 100 Minimum rack trave: 8.80 rpm : 350 Rack travel in mm : 7.20...7.40 CONSTANT REGULATION rpm : 360...500 Speed TORQUE CONTROL Torque control curve - 1st version rt speed rpm : 1100 Rack travel in m: 12.80...12.90 ad speed rpm : 700 1st speed 2nd speed Rack travel in m: 13.50...13.60 : 900 3rd speed rpm Rack travel in m: 12.90...13.20 Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 500 Pressure hPa : -: 9.50...9.70 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : 300 Rack travel in m: 10.80...10.90 2nd pressure hPa : 570 Rack travel in m: 12.30...12.60

Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 rpm : 700 Speed Del.quantity cm3/: 160.5...163.5 1000 s: (158.0...166.0) cm3 : 5.00 Spread 1000 s: (7.0) Aneroid pressure h: -Speed rpm Del.quantity cm3/: 77.0...79.0 1000 s: (75.0...81.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.80 rpm : 1140...1150 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 205.0...225.0 1000 s: (202.0...228.0) Rack travel in mm : 19.00...21.00 LOW IDLE rpm : 350 Speed Rack travel in mm : 7.20...7.40 Del.quantity cm3/: 16.0...20.0 1000 s: (14.0...22.0) cm3 : 3.50 Spread 1000 s: (5.50) Remarks:

1/min: 270 (240)

: C.D.C #3915168

Start-of-delivery mark/lock = 8.0° angular displacement of the cam after start of delivery of cylinder 1.

3rd pressure hPa : 900

START CUT-OUT

Rack travel in m: 13.50...13.60

Note remarks

: CUM 8,3 D 9 Test sheet : 23.04.90 Edition : 10.02.89 Replaces : ISO-4113 Test oil

: 0 403 436 108 Combination no.

Injection pump

Pump designation : PES6MW100/120RS1143

: 0 413 406 137 EP type number

Governor

Governor design. : RQV350...1100MW82-3

: 0 420 083 162 Governer no.

: 3914125 Cust. part no.

Customer-spec. information : CUMMINS/US Customer

: 6 CTA-830 Engine

1st version kW : 186.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder

: 1 688 901 017 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.05...3.15 Prestroke mm

: (3.00...3.20)

Rack travel in mm : 9.00...12.00

: 1-5- 3- 6- 2- 4 firing order

: 0-60-120-180-240-300 Phasing

Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 12.40...12.50

Del.quantity cm3/: 14.8...15.0

100 s: (14.6...15.2)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 350.02nd speed

Rack travel in mm: 7.2...7.4 Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

cm3 : 0.3 Spread

100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 1240 1st speed

: 8.80...9.20 travel mm

rpm : 1140 2nd speed

: 7.80...8.00 travel mm

rpm : 700 3rd speed

travel mm

4th speed rpm

3.80...4.40 350 1.20...1.60 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed Aneroid pressure h: 900

Del.quantity

: 148.0...150.0 1000 : (146.0...152.0)

: 3.50 Spread cm3

1000 : (6.00)

Control Lever position degrees: 44...52 Testing: 1st rack travel in: 11.40 Speed rpm : 1150...1160 2nd rack travel in: 4.00 Speed rpm : 1235...1265 4th rack travel in: 1350 Speed rpm : 0.00...1.00 LOW IDLE 1 Control Lever position degrees: 13...21 Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm : 7.3 Testing: rpm : 100 Speed Minimum rack trave: 9.30 Speed rpm : 350 Rack travel in mm : 7.20...7.40 CONSTANT REGULATION Speed rpm : 360...500 TORQUE CONTROL Torque control curve - 1st version : 1100 1st speed rpm Rack travel in m: 12.40...12.50 2nd speed rpm : 700 Rack travel in m: 13.20...13.30 d speed rpm : 1050 Rack travel in m: 12.40...12.60 3rd speed rpm : 900 4th speed Rack travel in m: 12.80...13.00 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed man hPa : -Pressure Rack travel mm : 10.20...10.30 Measurement 1/min: 500 Speed 1st pressure hPa : 300 Rack travel in m: 11.30...11.40 2nd pressure hPa : 520 Rack travel in m: 12.70...13.00 3rd pressure hPa : 900 Rack travel in m: 13.20...13.30

1st version

START CUT-OUT Speed

1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 : 700 Speed rpm

Del.quantity cm3/: 159.0...161.0 1000 s: (157.0...163.0) Spread cm3 : 5.00

1000 s: (7.0)

Aneroid pressure h: -Speed rpm

Del.quantity cm3/: 103.0...106.0 1000 s: (101.5...107.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.40

rpm : 1150...1160 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 205.0...225.0

1000 s: (202.0...228.0) Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350 Rack travel in mm : 7.20...7.40 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) Spread cm3: 3.50

1000 s: (5.50)

Remarks:

: C.D.C. #3914125

Start-of-delivery mark 9° cam angle after start of delivery cyl. 1.

Note remarks

: CUM 8,3 D10 Test sheet Edition : 23.04.90 : 28.04.89 Replaces Test oil : ISO-4113

Combination no. : 0 403 436 110

Injection pump

Pump designation : PES6MW100/120RS1143

: 0 413 406 137 EP type number

Governor

Governor design. : RQV350...1100MW82-5

: 0 420 083 177 Governer no.

: 3913639 Cust. part no.

Customer-spec. information Customer : CUMMINS/US

Engine : 6 CTA

: 179.0 1st version kW Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values __

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.05...3.15 Prestroke mm

: (3.00...3.20)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 11.60...11.70

Del.quantity cm3/: 13.5...13.7

100 s: (13.3...13.9)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 350.0 2nd speed Rack travel in mm: 7.0...7.2

Del.quantity cm3/: 1.6...2.0

100 s: (1.4...2.2) cm3 : 0.3

Spread

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1240 1st speed

: 8.80...9.20 travel mm

2nd speed rpm : 1140

travel mm : 7.80...8.00

rpm : 700 3rd speed

: 3.80...4.40 rpm : 350 travel mm

4th speed

: 1.20...1.60 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed Aneroid pressure h: 900

: 135.0...137.0 Del.quantity 1000 : (133.0...139.0)

: 3.50 cm3 Spread

> : (6.00) 1000

1st version Control lever position degrees: 43...51 Testina: 1st rack travel in: 10.60 rpm : 1140...1150 Speed 2nd rack travel in: 4.00 rpm : 1215...1245 Speed 4th rack travel in: 1300 rpm : 0.00...1.00Speed LOW IDLE 1 Control Lever position degrees: 9...17 Setting point w/out bumper spring Speed rpm Rack travel in mm: 7.1 Testina: Speed rpm : 100 Minimum rack trave: 9.00 rpm : 350 Speed Rack travel in mm : 7.00...7.20 TORQUE CONTROL Torque control curve - 1st version rpm : 1100 1st speed Rack travel in m: 11.60...11.70 and speed rpm : 700 2nd speed Rack travel in m: 12.90...13.00 : 900 3rd speed man Rack travel in m: 12.40...12.60 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rom Pressure hPa : : 10.00...10.10 Rack travel mm Measurement $1/\min : 500$ Speed 1st pressure hPa : 300 Rack travel in m: 11.10...11.20 2nd pressure hPa : 520 Rack travel in m: 12.30...12.60 3rd pressure hPa : 900 Rack travel in m: 12.90...13.00 START CUT-OUT

1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 900 : 700 rpm Del.quantity cm3/: 155.0...158.0 1000 s: (152.5...160.5) cm3 : 5.00 Spread 1000 s: (7.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 98.0...100.0 1000 s: (96.0...102.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.60 Speed rpm : 1140...1150

STARTING FUEL DELIVERY

LOW IDLE

Speed rpm : 350
Rack travel in mm : 7.00...7.20
Del.quantity cm3/: 16.0...20.0
1000 s: (14.0...22.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

: C.D.C #3913639

Start-of-delivery mark 9° cam angle after start of delivery cyl. 1.

Speed

Note remarks

: CUM 8,3 D12 Test sheet : 23.04.90 Edition : 02.10.89 Replaces : ISO-4113 Test oil

Combination no. : 0 403 436 111

Injection pump

Pump designation : PES6MW100/120RS1143

: 0 413 406 137 EP type number

Governor

Governor design.: RQV350...1200MW82-6

: 0 420 083 184 Governer no.

: 3916000 Cust. part no.

Customer-spec. information Customer : CUMMINS/US

: 6 CTA-830 Engine

Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.15...3.25 Prestroke mm : (3.10...3.30)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

rpm: 1200 1st speed

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 13.8...14.0

100 s: (13.6...14.2)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 7.1...7.3 Del.quantity cm3/: 1.2...1.6

100 s: (1.0...1.8)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1250 1st speed

: 7.60...7.80 travel mm

rpm : 1350 2nd speed

: 8.60...9.00 travel mm

3rd speed : 350 rpm

: 1.20...1.60 travel mm

: 800 4th speed rpm

: 4.90...5.50 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1200 Speed Aneroid pressure h: 700

: 138.0...140.0 Del.quantity

1000 : (136.0...142.0)

: 3.50 cm3 Spread

1000 : (6.00)

RATED SPEED

1st version

1/min : 220 (240) Control lever Speed position degrees: 42...50 FUEL DELIVERY CHARACTERISTICS Testing: 1st rack travel in: 11.10 rpm : 1240...1250 1st version 2nd rack travel in: 4.00 Aneroid pressure h: 700 Speed rpm : 1370...1400 4th rack travel in: 1455 Speed : 750 rpm Del.quantity cm3/: 139.0...142.0 1000 s: (136.5...144.5) cm3 : 5.00 rpm : 0.00...1.00 Speed Spread 1000 s: (7.0) LOW IDLE 1 Aneroid pressure h: -Control lever : 500 position degrees: 11...19 Speed rpm Del.quantity cm3/: 108.0...110.0 1000 s: (106.0...112.0) Setting point w/out bumper spring : 350 rpm Rack travel in mm: 7.2 BREAKAWAY Testing: rpm : 100 Speed Minimum rack trave: 9.00 1st version : 350 1mm rack travel less than Speed rpm Rack travel in mm : 7.10...7.30 full load rack tr: 11.10 rpm : 1240...1250 CONSTANT REGULATION Speed rpm : 360...500 Speed STARTING FUEL DELIVERY TORQUE CONTROL Torque control curve - 1st version rpm : 1200 : 100 Speed 1st speed rpm Del.quantity cm3/: 205.0...225.0 Rack travel in m: 12.10...12.20 rpm : 750 1000 s: (202.0...228.0) 2nd speed Rack travel in m: 12.50...12.60 rpm : 1000 3rd speed LOW IDLE Rack travel in m: 12.10...12.20 4th speed rpm : 900 Speed rpm Rack travel in mm : 7.10...7.30 Rack travel in m: 12.20...12.40 Del.quantity cm3/: 12.0...16.0 1000 s: (10.0...18.0) Aneroid/Altitude cm3 : 3.50 Spread Compensator Test 1000 s: (5.50) 1st version Remarks: : C.D.C #3916000 Setting : 500 Speed rpm Start-of-delivery mark at 10° cam Pressure hPa : rotation angle after start of delivery, : 11.00...11.10 Rack travel mm cylinder 1 Measurement 1/min: 500 Speed 1st pressure hPa : 390 Rack travel in m: 11.40...11.50 2nd pressure hPa : 480 Rack travel in m: 11.90...12.20 3rd pressure hPa : 700 Rack travel in m: 12.50...12.60

START CUT-OUT

Note remarks

: CUM 8,3 D14 Test sheet : 02.05.90 Edition

Replaces

: ISO-4113 Test oil

: 0 403 436 112 Combination no.

Injection pump

Pump designation : PES6MW100/120RS1143

: 0 413 406 137 EP type number

Governor

Governor design. : RQV350...1200MW78-3

: 0 420 083 213 Governer no.

Customer-spec. information Customer : CUMMINS

Engine : 6 CTA

: 179.0 1st version kW : 2400 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening 1

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

: 1 680 750 014 Test lines

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.05...3.15 Prestroke mm

: (3.00...3.20) Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 14.5...14.7

100 s: (14.3...14.9)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 350.02nd speed

Rack travel in mm: 5.0...5.2

Del.quantity $cm3/: 1.1...1.\overline{5}$

100 s: (0.8...1.7) cm3 : 0.3

Spread 100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 1400 1st speed

: 7.50...7.90 travel mm rpm : 1200

2nd speed

: 6.40...6.60 travel mm

3rd speed rpm : 600

: 3.20...3.80 : 350 travel mm

4th speed rpm

: 1.40...1.80 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1200 Speed

Aneroid pressure h: 900

: 145.0...147.0 Del.quantity 1000 : (143.0...149.0)

: 3.50 cm3 Spread

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 39...47

Testing:

1st rack travel in: 10.70

rpm : 1265...1275

2nd rack travel in: 4.00

Speed rpm : 1425...1455

4th rack travel in: 1550

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 10...18

Setting point w/out bumper spring

: 350 rpm Rack travel in mm: 5.1

Testing:

rpm : 100 Speed

Minimum rack trave: 6.50 rpm : 350 Speed

Rack travel in mm : 5.00...5.20

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rom

Pressure hPa : -

Rack travel mm : 8.90...9.00

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : 265

Rack travel in m: 9.70...9.80

2nd pressure hPa : 505

Rack travel in m: 10.90...11.20

3rd pressure hPa : 900

Rack travel in m: 11.70...11.80

START CUT-OUT

1/min: 270 (290) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 500

Del.quantity cm3/: 76.0...78.0

1000 s: (74.0...80.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.70

rpm : 1265...1275 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 205.0...225.0

1000 s: (202.0...228.0) Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350

Rack travel in mm : 5.00...5.20

Del.quantity cm3/: 11.0...15.0 1000 s: (8.5...17.5)

cm3 : 3.50 1000 s: (5.50) Spread

Remarks:

Start-of-delivery mark/lock = 8.0° angular displacement of the cam after start of delivery of cylinder 1.

Note remarks

: MB 4,0 G Test sheet : 23.04.90 Edition

Replaces

: ISO-4113 Test oil

: 0 403 444 116 Combination no.

Injection pump

Pump designation : PES4MW100/720RS1127-

: 0 413 404 111 EP type number

Governor

Governor design. : RQV300...1400MW48-7

: 0 420 083 172 Governer no.

Customer-spec. information Customer : MB-NFZ

: OM 364A Engine

: 70.0 1st version kW : 2800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina .

pressure, bar : 172...175

: 1 680 750 015 Test Lines

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.70...3.80 Prestroke mm

: (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1400

Rack travel in mm : 10.00...10.10

Del.guantity cm3/: 6.7...6.9

100 s: (6.5...7.1)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm: 7.9...8.1 Del.quantity cm3/: 0.9...1.3

100 s: (0.6...1.5)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1550 1st speed

travel mm : 9.00...9.40

rpm : 1450 2nd speed

: 8.20...8.40 travel mm : 550

3rd speed rpm : 2.80...3.40 travel mm

: 300 4th speed rpm

: 1.00...1.40 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1450 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1400Speed

: 67.0...69.0 Del.quantity

1000 : (65.0...71.0)

cm3 : 3.50 Spread

: (6.00) 1000

1st version Control lever position degrees: 48...56 Testina: 1st rack travel in: 9.50 rpm : 1450...1460 Speed 2nd rack travel in: 4.00 Speed rpm : 1540...1570 4th rack travel in: 1650 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 18...26 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 8.0 Testing: : 100 Speed man Minimum rack trave: 9.50 : 300 rpm Rack travel in mm : 7.90...8.10 TORQUE CONTROL Torque control curve - 1st version rpm : 1400 1st speed Rack travel in m: 10.00...10.10 rpm : 750 2nd speed Rack travel in m: 10.80...10.90 rpm : 950 3rd speed Rack travel in m: 10.60...10.90 : 1100 4th speed rpm Rack travel in m: 10.20...10.50 START CUT-OUT 1/min: 200 (230) Speed FUEL DELIVERY CHARACTERISTICS 1st version : 750 man Speed Del.quantity cm3/: 60.0...62.0 1000 s: (57.0...65.0) cm3 : 5.00Spread 1000 s: (7.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.50 Speed rpm : 1450...1460

Speed rpm : 100 Del.quantity cm3/: 78.0...88.0 1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 300 Rack travel in mm : 7.90...8.10 Del.quantity cm3/: 9.0...13.0 1000 s: (6.5...15.5) cm3 : 3.50 Spread 1000 s: (5.50)

Remarks:

005

STARTING FUEL DELIVERY

Note remarks

Test sheet : MB 4,0 G 1 Edition : 02.05.90

Replaces

: ISO-4113 Test oil

Combination no. : 0 403 444 117

Injection pump

: PES4MW100/720RS1127-Pump designation

: 0 413 404 111 EP type number

Governor

Governor design.: RQV300...1400MW48-10

: 0 420 083 178 Governer no.

Customer-spec. information : MB-NFZ Customer

: OM 364A Engine

: 85.0 1st version kW Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.50...3.60 Prestroke mm

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1400 1st speed

Rack travel in mm : 11.50...11.60

Del.guantity cm3/: 7.9...8.1

100 s: (7.7...8.3)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm: 8.9...9.1 Del.quantity cm3/: 0.9...1.3

100 s: (0.6...1.5)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1550 1st speed

: 9.00...9.40 travel mm rpm : 1450 2nd speed

: 8.30...8.50 travel mm 3rd speed rpm

: 550 : 2.80...3.40 travel mm

rpm : 300 4th speed

: 1.00...1.40 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1450 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1400 Speed

: 79.0...81.0 Del.quantity

1000 : (77.0...83.0) : 3.50 cm3

Spread 1000 : (6.00)

1st version Control lever position degrees: 48...56 Testina: 1st rack travel in: 10.50 rpm : 1440...1450 Speed 2nd rack travel in: 4.00 rpm : 1540...1570 Speed 4th rack travel in: 1650 Speed rpm : 0.00...1.00LOW IDLE 1 Control Lever position degrees: 18...26 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 9.0 Testina: : 100 Speed rpm Minimum rack trave: 10.50 : 300 rpm Rack travel in mm : 8.90...9.10 TORQUE CONTROL Dimension a mm : 1.30 Torque control curve - 1st version 1st speed rpm : 1400 Rack travel in m: 11.50...11.60 2nd speed rpm : 750 Rack travel in m: 12.80...12.90 rpm : 950 3rd speed Rack travel in m: 12.40...12.60 4th speed rpm : 1100 Rack travel in m: 12.00...12.30 START CUT-OUT Speed 1/min : 200 (230) FUEL DELIVERY CHARACTERISTICS 1st version : 750 Speed rpm Del.quantity cm3/: 75.0...77.0 1000 s: (73.0...79.0) : 5.00 Spread cm3 1000 s: (7.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.50

rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 78.0...88.0 1000 s: (75.0...91.0)

LOW IDLE

rpm : 300 Speed

Rack travel in mm : 8.90...9.10 Del.guantity cm3/: 9.0...13.0 1000 s: (6.5...15.5)

cm3 : 3.50Spread

1000 s: (5.50)

Remarks:

Speed

Note remarks

: MB 6,0 D 88 Test sheet : 04.05.90 Edition

Replaces

Test oil : ISO-4113

: 0 403 446 184A Combination no.

Injection pump

Pump designation : PES6MW100/720RS1144

: 0 413 406 138 EP type number

Governor

Governor design. : RQV300...1300MW48-3

: 0 420 083 121 Governer no.

Customer-spec. information : MB-NFZ Customer

: 0M366C Engine

: 100.0 1st version kW Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values __

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.70...3.80 Prestroke mm

: (3.65...3.85)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1300

Rack travel in mm : 9.40...9.50

Del.guantity cm3/: 5.4...5.6

100 s: (5.2...5.8)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 7.8...7.9 Del.quantity cm3/: 0.9...1.3

100 s: (0.6...1.5)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1340 1st speed

: 8.50...8.70 travel mm

: 1450 2nd speed rom

: 9.30...9.70 travel mm

3rd speed : 500 rpm

2.70...3.30 travel mm : 300 4th speed

rom : 1.20...1.70 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1350 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1300 Speed

: 54.0...56.0 Del.quantity 1000 : (52.0...58.0)

: 3.50 cm3 Spread

1000 : (6.00)

RATED SPEED

1st version

Control Lever position degrees: 50...58 Testing: 1st rack travel in: 8.40 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 rpm : 1425...1455 Speed 4th rack travel in: 1550 rpm : 0.00...1.00 Speed LOW IDLE 1 Control Lever position degrees: 18...26 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 7.8 Testing: rpm : 100 Speed Minimum rack trave: 9.30 Speed rpm : 300 Rack travel in mm : 7.80...7.90 CONSTANT REGULATION rpm : 330...500 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1300 Rack travel in m: 9.40...9.50 2nd speed rpm : 500 Rack travel in m: 10.10...10.20 3rd speed rpm : 1020 Rack travel in m: 9.70...9.90 START CUT-OUT 1/min: 230 (250) Speed FUEL DELIVERY CHARACTERISTICS 1st version : 500 Speed rpm Del.quantity cm3/: 31.0...34.0 1000 s: (28.5...36.5) cm3 : 5.00Spread 1000 s: (7.0) BREAKAWAY 1st version 1mm rack travel less than

full load rack tr: 8.40

rpm : 1340...1350 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 78.0...88.0 1000 s: (75.0...91.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 300 Rack travel in mm : 7.80...7.90 Del.quantity cm3/: 9.0...13.0 1000 s: (6.5...15.5)

cm3 : 3.50 1000 s: (5.50) Spread

Remarks:

:

D09

Note remarks

: MB 6,0 D 28 : 19.03.90 Test sheet Edition : 19.08.88 Replaces : ISO-4113 Test oil

: 0 403 446 188 Combination no.

Injection pump

Pump designation : PES6MW100/720RS1144

: 0 413 406 138 EP type number

Governor

Governor design. : RQV300...1300MW48-4

: 0 420 083 126 Governer no.

Customer-spec. information Customer : DB

Engine : 0M366A

1st version kW : 100.0 : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.70...3.80 Prestroke mm

: (3.65...3.85)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1300 1st speed

Rack travel in mm : 10.00...10.10

Del.quantity cm3/: 6.2...6.4

100 s: (6.0...6.6)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 7.3...7.4 Del.quantity cm3/: 0.9...1.3

100 s: (0.7...1.5) cm3 : 0.3Spread

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1340 1st speed

: 8.50...8.70 travel mm : 1450 2nd speed

rpm : 9.30...9.70 travel mm

500

3rd speed rpm

travel mm : 2.70...3.30 : 300 4th speed rpm

: 1.20...1.70 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1350 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1300 Speed

: 62.0...64.0 Del.quantity 1000 : (60.0...66.0)

cm3 : 3.50 Spread

1000 : (6.00)

RATED SPEED

1st version

Control lever position degrees: 50...58 Testing: 1st rack travel in: 9.00 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 rpm : 1415...1445 Speed 4th rack travel in: 1550 rpm : 0.00...1.00Speed LOW IDLE 1 Control Lever position degrees: 18...26 Setting point w/out bumper spring rpm Rack travel in mm: 7.3 Testing: Speed : 100 rpm Minimum rack trave: 9.30 Speed rpm : 300 Rack travel in mm : 7.30...7.40 CONSTANT REGULATION Speed rpm : 330...500 TORQUE CONTROL Torque control curve - 1st version rpm : 1300 1st speed Rack travel in m: 10.00...10.10 rpm : 700 2nd speed Rack travel in m: 11.00...11.10 rpm : 600 3rd speed Rack travel in m: 11.00...11.10 th speed rpm : 1000 4th speed Rack travel in m: 10.60...10.90 START CUT-OUT 1/min: 230 (250) Speed FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 700 Del.quantity cm3/ : 59.5...62.5 1000 s: (57.0...65.0) cm3 : 5.00Spread 1000 s: (7.0) BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.00 rpm : 1340...1350 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 78.0...88.0 1000 s: (75.0...91.0) Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 300 Rack travel in mm : 7.30...7.40 Del.quantity cm3/ : 9.0...13.0

1000 s: (7.0...15.0)

cm3 : 3.50Spread 1000 s: (5.00)

Remarks:

D11

Note remarks

Test sheet Edition : MB 6,0 D 85 : 07.02.89

Replaces

Test oil : ISO-4113

Combination no. : 0 403 446 191

Injection pump

Pump designation : PES6MW100/720RS1144

: 0 413 406 138 EP type number

Governor

Governor design. : RQV300...1200MW48-5

: 0 420 083 140 Governer no.

Customer-spec. information

: DAIMLER-BENZ Customer

: 0M366A Engine

: 116.0 1st version kW : 2400 Rated speed : 2400 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: D 681 343 009 assembly

Opening

: 172...175 pressure, bar

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.70...3.80 Prestroke mm

: (3.65...3.85)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 10.80...10.90

Del.quantity cm3/: 7.7...7.9

100 s: (7.5...8.1)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 8.0...8.1 Del.quantity cm3/: 1.0...1.4

100 s: (0.9...1.5)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 1250 1st speed

: 7.30...7.50 rpm : 1380 travel mm 2nd speed

: 8.50...8.90 travel mm

rpm : 500 3rd speed

: 2.70...3.30 travel mm

4th speed rpm

: 300 : 1.20...1.70 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1330 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1200 Speed

: 77.0...79.0 Del.quantity

1000 : (75.0...81.0)

: 3.50 Spread cm3

: (6.00) 1000

1st version Control Lever position degrees: 46...54 Testing: 1st rack travel in: 9.80 rpm : 1250...1260 Speed 2nd rack travel in: 4.00 rpm : 1350...1380 Speed 4th rack travel in: 1500 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 16...24 Testina: Speed : 100 rom Minimum rack trave: 9.80 rpm : 300 Rack travel in mm: 8.00...8.10 CONSTANT REGULATION Speed rpm : 330...500 TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 1200 Rack travel in m: 10.80...10.90 2nd speed rpm : 700 Rack travel in m: 11.10...11.20 : 800 3rd speed rpm Rack travel in m: 10.90...11.10 START CUT-OUT 1/min: 230 (250) Speed FUEL DELIVERY CHARACTERISTICS 1st version : 700 rpm Speed Del.quantity cm3/: 62.0...64.0 1000 s: (60.0...66.0) cm3 : 5.00Spread 1000 s: (7.00) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.80 rpm : 1250...1260 Speed

Speed rpm : 100
Del.quantity cm3/: 80.0...90.0
 1000 s: (77.0...93.0)
Rack travel in mm : 19.00...21.00
LOW IDLE

Speed rpm : 300
Rack travel in mm : 8.00...8.10
Del.quantity cm3/: 10.0...14.0
 1000 s: (9.0...15.0)
Spread cm3 : 3.50
 1000 s: (5.00)

Remarks:

STARTING FUEL DELIVERY

Note remarks

: RVI 8,8 S 1 Test sheet : 12.04.90 Edition : 02.01.90 Replaces : ISO-4113 Test oil

: 0 403 446 209 Combination no.

Injection pump

Pump designation : PES6MW100/320RS1171

EP type number : 0 413 406 156

Governor

: RQV300...1300MW80-1 Governor design.

: 0 420 083 159 Governer no.

Customer-spec. information : RVI Customer

Engine : MIDSO60212B

1st version kW : 113.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 033

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening |

pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.00...3.10 Prestroke mm : (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

BASIC SETTING

rpm : 13001st speed

Rack travel in mm : 10.80...10.90

Del.quantity cm3/: 8.6...8.8

100 s: (8.4...9.0)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 5.2...5.6 Del.quantity cm3/: 1.6...2.0

100 s: (1.3...2.2)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1500 1st speed

: 8.70...9.10 travel mm

rpm : 1350 2nd speed : 7.60...7.80 travel mm

rpm : 500 3rd speed

: 2.80...3.40 travel mm : 300 4th speed rom

: 1.20...1.60 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1300 Speed Aneroid pressure h: 700

: 86.0...88.0 Del.quantity

1000 : (84.0...90.0)

: 3.50 Spread cm3 : (6.00) 1000

RATED SPEED

1st version Control lever

position degrees: 60...68

Testing:

1st rack travel in: 9.80

014

rpm : 1390...1400 Speed 2nd rack travel in: 4.00 Speed rpm : 1540...1570 4th rack travel in: 1700 rpm : 0.0...1.00Speed LOW IDLE 1 Control lever position degrees: 10...18 Setting point w/out bumper spring : 300 rpm Rack travel in mm: 5.4 Testing: : 200 Speed man Minimum rack trave: 7.00 rpm : 300 Rack travel in mm : 5.20...5.60 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm Pressure hPa : -Rack travel mm : 8.80...9.00 Measurement 1/min: 500 Speed 1st pressure hPa : 100 Rack travel in m: 9.30...9.40 2nd pressure hPa : 200 Rack travel in m: 10.20...10.30 3rd pressure hPa : 700 Rack travel in m: 10.80...10.90 START CUT-OUT 1/min: 230 (250) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 : 900 Speed rpm Del.quantity cm3/: 81.0...84.0 1000 s: (78.5...86.5) cm3 : 5.00Spread 1000 s: (7.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 43.0...45.0 1000 s: (41.0...47.0)

1st version 1mm rack travel less than full load rack tr: 9.80 rpm : 1390...1400 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 90.0...110.0 1000 s: (87.0...113.0) Rack travel in mm : 19.50...21.00 LOW IDLE rpm : 300 Speed Rack travel in mm : 5.20...5.60 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) Spread cm3 : 3.50 1000 s: (5.50) Remarks: Start-of-delivery mark mode with prestroke 3.00...3.10 mm at barrel 1

Note remarks

: RVI 8,8 S 2 Test sheet : 12.04.90 Edition : 01.02.90 Replaces

: ISO-4113 Test oil

: 0 403 446 220 Combination no.

Injection pump

Pump designation : PES6MW100/320RS1171

EP type number : 0 413 406 156

Governor

Governor design. : RQV300...1400MW80-3

Governer no. : 0 420 083 183

Customer-spec. information Customer : RVI

: MIDR 06.02.12D Engine

: 134.0 1st version kW Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 033

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 173...176

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.00...3.10 Prestroke mm

: (2.95...3.15)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st spect rpm: 1400

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 9.2...9.4

100 s: (9.0...9.6)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 5.10...5.50 Del.quantity cm3/ : 1.5...1.9

100 s: (1.2...2.1)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1590 1st speed

: 9.50...9.90 travel mm

rpm : 1450 2nd speed

: 8.50...8.70 travel mm

rpm : 500 3rd speed

: 2.80...3.40 travel mm

: 300 4th speed rpm

1.20...1.60 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Aneroid pressure h: 750

: 92.0...94.0 Del.quantity

1000 : (90.0...96.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 63...71

Testing:

1st rack travel in: 10.10

rpm : 1470...1480 Speed 2nd rack travel in: 4.00 rpm : 1610...1640 Speed 4th rack travel in: 1700 rpm : 0.0...1.00Speed LOW IDLE 1 Control lever position degrees: 12...20 Setting point w/out bumper spring : 300 rpm Rack travel in mm: 5.8 Testina: : 200 Speed rpm Minimum rack trave: 7.00 rpm : 300 Rack travel in mm : 5.10...5.50 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : -Pressure Rack travel mm : 8.60...8.70 Measurement 1/min: 500 Speed 1st pressure hPa : 80 Rack travel in m: 9.00...9.10 2nd pressure hPa : 200 Rack travel in m: 10.30...10.60 3rd pressure hPa : 750 Rack travel in m: 11.10...11.20 START CUT-OUT 1/min: 230 (250) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 750 Speed rpm : 900 Del.quantity cm3/: 86.5...89.5 1000 s: (84.0...92.0)

cm3 : 5.00 Spread 1000 s: (7.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 42.0...44.0 1000 s: (40.0...46.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.10 rpm : 1470...1480 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed Del.quantity cm3/: 95.0...115.0 1000 s: (92.0...118.0) Rack travel in mm : 19.50...21.00

LOW IDLE

rpm : 300 Speed Rack travel in mm : 5.10...5.50 Del.quantity cm3/: 15.0...19.0 1000 s: (12.5...21.5) Spread cm3: 3.50

1000 s: (5.50)

Remarks:

Start-of-delivery mark mode with prestroke 3.00...3.10 mm at barrel 1

Note remarks

: RVI 8,8 S 3 Test sheet : 02.05.90 Edition : 02.01.90 Replaces : ISO-4113 Test oil

Combination no. : 0 403 446 235

Injection pump

Pump designation : PES6MW100/320RS1171 : 0 413 406 156

EP type number

Governor

Governor design. : RQV300...1300MW80-5 Governor no. : 0 420 083 197

Customer-spec. information Customer : RVI

: MIDS 060212B Engine

: 113.0 1st version kW : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 033

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.00...3.10 Prestroke mm : (2.95...3.15)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm : 13001st speed

Rack travel in mm : 10.80...10.90

Del.quantity cm3/: 8.6...8.8

100 s: (8.4...9.0)

cm3 : 0.3 Spread

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 5.20...5.60 Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1500

travel mm : 8.70...9.10

rpm : 1350 2nd speed

: 7.60...7.80 travel mm

rpm : 500 3rd speed

: 2.80...3.40 travel mm

rpm : 300 4th speed : 1.20...1.60 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1300Speed

Aneroid pressure h: 700

: 86.0...88.0 Del.quantity

1000 : (84.0...90.0)

: 3.50 cm3 Spread

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 60...68

Testing:

1st rack travel in: 9.80

D18

rpm : 1390...1400 Speed 2nd rack travel in: 4.00 rpm : 1505...1535 Speed

4th rack travel in: 1700

rpm : 0.0...1.00Speed

LOW IDLE 1 Control lever

position degrees: 10...18

Setting point w/out bumper spring

: 300 rom Rack travel in mm: 5.4

Testing:

Speed rpm : 200 Minimum rack trave: 7.00 Speed rpm : 300

Rack travel in mm : 5.20...5.60

Aneroid/Altitude Compensator Test

1st version Settina

: 500 Speed rpm

Pressure hPa

: 8.80...9.00 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : 100

Rack travel in m: 9.30...9.40 2nd pressure hPa : 200

Rack travel in m: 10.20...10.50

3rd pressure hPa : 700

Rack travel in m: 10.80...10.90

START CUT-OUT

1/min: 230 (250) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700 : 900 rom

Del.quantity cm3/: 81.0...84.0 1000 s: (78.5...86.5)

cm3 : 5.00Spread 1000 s: (7.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 43.0...45.0 1000 s: (41.0...47.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.80

rpm : 1390...1400 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.guantity cm3/: 90.0...110.0 1000 s: (87.0...113.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

: 300 Speed rpm

Rack travel in mm : 5.20...5.60 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

Start-of-delivery mark mode with prestroke 3.00...3.10 mm at barrel 1

Note remarks

: AIF 5,9 A : 12.04.90 Test sheet Edition : 02.01.90 Replaces Test oil : ISO-4113

: 0 403 446 238 Combination no.

Injection pump

Pump designation : PES6MW100/720RS1188

EP type number : 0 413 406 175

Governor

: RQV300...1350MW106 Governor design.

: 0 420 083 200 Governer no.

Customer-spec. information : AIFO Customer

: 8061.25.051 Engine

1st version kW : 210.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening.

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10 : (2.95...3.15)

Rack travel in mm : 11.50...14.50

: 1-5-3-6-Firing order

BASIC SETTING

Tolerance + - °

Phasing

rpm : 13501st speed

Rack travel in mm : 10.90...11.00

Del.guantity cm3/: 12.8...13.0

100 s: (12.6...13.2)

: 0-60-120-180-240-300

: 0.50 (0.75)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 300.0 2nd speed Rack travel in mm: 5.9...6.1 Del.quantity cm3/: 1.1...1.5 100 s: (0.8...1.7)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 15301st speed : 9.00...9.20 travel mm

rpm : 1400 2nd speed

: 7.80...8.20 travel mm

rpm : 600 3rd speed

: 2.90...3.50 travel mm

: 300 4th speed rpm

: 1.00...1.40 travel mm

GUIDE SLEEVE POSITION Control-Lever position

Degree: -1

rpm : 1450 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1350 Speed

: 128.0...130.0 Del.quantity

1000 : (126.0...132.0)

: 3.50 Spread cm3

: (6.00) 1000

RATED SPEED

1st version

Control lever position degrees: 118...126 Testing: 1st rack travel in: 9.90 rpm : 1400...1410 2nd rack travel in: 4.00 Speed rpm : 1515...1545 4th rack travel in: 1650 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 84...92 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 6.0 Testing: rpm : 200 Speed Minimum rack trave: 7.50 : 300 Speed rpm Rack travel in mm : 5.90...6.10 TORQUE CONTROL Dimension a mm : 0.80 Torque control curve - 1st version 1st speed rpm : 1350 Rack travel in m: 10.90...11.00 rpm : 800 2nd speed Rack travel in m: 11.70...11.80 3rd speed rpm : 1100 Rack travel in m: 11.30...11.50 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 800 Del.quantity cm3/: 137.0...140.0 1000 s: (134.5...142.5) : 5.00 Spread cm3 1000 s: (7.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.90 rpm : 1400...1410 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 100.0...120.0

1000 s: (97.0...123.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.90...6.10
Del.quantity cm3/ : 11.0...15.0

1000 s: (8.5...17.5)

cm3 : 3.50Spread

1000 s: (5.50)

Remarks:

Note remarks

: KHD 6,1 V Test sheet : 02.05.90 Edition : 16.02.90 Replaces : ISO-4113 Test oil

Combination no. : 0 403 446 247

Injection pump

Pump designation : PES6MW100/720RS1195

EP type number : 0 413 406 183

Governor

Governor design. : RQV300...1150MW107

: 0 420 083 208 Governer no.

Customer-spec. information Customer : KHD

: BF 6L 913 C Engine

: 101.0 1st version kW : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening |

pressure, bar : 172...175

: 1 680 740 014 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 4.00...4.10 Prestroke mm : (3.95...4.15)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 9.70...9.80

Del.quantity cm3/: 8.4...8.6

100 s: (8.2...8.8)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm: 7.5...7.7 Del.quantity cm3/: 1.3...1.7 100 s: (1.0...1.9)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1200 1st speed

travel mm : 9.80...10.20

rpm : 800 2nd speed : 6.00...6.20 travel mm

rpm : 500 3rd speed

: 3.20...3.80 travel mm

rpm : 300 4th speed

travel mm : 2.20...2.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1050

Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1150 Speed Aneroid pressure h: 1000

: 84.0...86.0 Del.quantity

1000 : (82.0...88.0)

: 3.50 Spread cm3 1000 : (6.00)

RATED SPEED

1st version Control Lever

position degrees: 40...48

Testina:

1st rack travel in: 8.70

rpm : 1180...1190 Speed

2nd rack travel in: 4.00

Speed rpm : 1230...1260 4th rack travel in: 1300

rpm : 0.00...1.00Speed

LOW IDLE 1 Control Lever

position degrees: 13...21

Setting point w/out bumper spring

rpm : 300 Speed Rack travel in mm: 7.6

Testing:

rpm : 100 Speed Minimum rack trave: 9.00 : 300 Speed man

Rack travel in mm : 7.50...7.70 Rack travel in mm : 2.00 Speed rom : 420...480

TORQUE CONTROL

Dimension a mm : 0.75

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 9.70...9.80

: 800 2nd speed rpm

Rack travel in m: 10.30...10.50

rpm : 1030 3rd speed

Rack travel in m: 10.00...10.20

Aneroid/Altitude Compensator Test

1st version

Settina

: 500 Speed rom Pressure hPa : -

Rack travel mm : 10.00...10.20

Measurement

1/min: 500 Speed 2nd pressure hPa : 450

Rack travel in m: 10.20...10.30

3rd pressure hPa : 1000

Rack travel in m: 10.30...10.50

START CUT-OUT

1/min: 230 (250) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm: 800 Del.quantity cm3/: 86.0...89.0

1000 s: (83.5...91.5)

cm3 : 5.00Spread

1000 s: (7.0)

Aneroid pressure h: -

Speed rpm: 500 Del.quantity cm3/: 69.0...71.0 1000 s: (67.0...73.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.70

rpm : 1180...1190 Speed

STARTING FUEL DELIVERY

: 100 Speed mar

Del.quantity cm3/: 110.0...130.0 1000 s: (107.0...133.0)

LOW IDLE

Speed rpm : 300 Rack travel in mm : 7.50...7.70 Del.quantity cm3/ : 13.0...17.0

1000 s: (10.5...19.5)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

Test electrically-released starting quantity (EES) with 12 volts

Note remarks

Test sheet : MB 6,0 b 84
Edition : 30.03.90
Replaces : 05.03.90
Test oil : ISO-4113

Combination no. : 0 403 446 248

Injection pump

Pump designation : PES6MW100/720RS1144

EP type number : 0 413 406 138

Governor

Governor design. : RQV300...1400MW48-12

Governer no. : 0 420 083 212

Customer—spec. information Customer : MB-NFZ

Engine : OM3660

1st version kW : 100.0 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80 : (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

BASIC SETTING

1st speed rpm: 1400

Rack travel in mm: 9.90...10.00

Del.quantity cm3/ : 5.9...6.1

100 s: (5.7...6.3)

Spread cm3: 0.3

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 8.0...8.2 Del.quantity cm3/ : 0.9...1.3 100 s: (0.6...1.5)

Spread cm3 : 0.3 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1550

travel mm : 9.20...9.60

2nd speed rpm : 1450 travel mm : 8.30...8.50

3rd speed rpm : 550 travel mm : 2.80...3.40

travel mm : 2.80. 4th speed rpm : 300

travel mm : 1.00...1.40

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm: 1470

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1400

Del.quantity : 59.0...61.0

1000 : (57.0...63.0) cm3 : 3.50

Spread cm3 : 3.50 1000 : (6.00)

RATED SPEED

1st version

Control lever position degrees: 108...116 Testing: 1st rack travel in: 8.90 Speed rpm: 1440...1450 2nd rack travel in: 4.00 rpm : 1530...1560 Speed 4th rack travel in: 1650 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 76...82 Setting point w/out bumper spring : 300 rpm Rack travel in mm: 8.1 Testing: rpm : 100 Speed Minimum rack trave: 9.50 : 300 Speed rpm Rack travel in mm: 8.00...8.20 TORQUE CONTROL Dimension a mm : 0.50 Torque control curve - 1st version 1st speed rpm : 1400 Rack travel in m: 9.90...10.00 2nd speed rpm : 800 Rack travel in m: 10.40...10.50 3rd speed rpm : 1050 Rack travel in m: 10.10...10.30 START CUT-OUT 1/min: 230 (250) Speed FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 800 Del.quantity cm3/: 52.5...55.5 1000 s: (50.0...58.0) Spread cm3: 5.00 1000 s: (7.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 8.90 rpm : 1440...1450 Speed

Speed rpm : 100 Del.quantity cm3/ : 78.0...88.0 1000 s: (75.0...91.0)

LOW IDLE

Remarks:

:

STARTING FUEL DELIVERY

Note remarks

: MAN 7,2 W Test sheet : 02.05.90 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 403 456 109

Injection pump

Pump designation : PES6MW100/321RS1200

: 0 413 406 189 EP type number

Governor

: RQV250...1200MW83-2 Governor design.

: D 420 083 216 Governer no.

: 3-7036 Cust. part no.

Customer-spec. information : MAN Customer

Engine : D 0826 LF02

1st version kW : 169.0 : 2400 Rated speed

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening |

: 172...175 pressure, bar

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.50...3.60 : (3.45...3.65) Prestroke mm

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 12.50...12.60

Del.quantity cm3/: 13.7...13.9

100 s: (13.5...14.1)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 250.0 2nd speed Rack travel in mm : 4.8...5.0 Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1250 1st speed

: 10.50...10.60 travel mm

rpm : 810 2nd speed

: 5.90...6.10 travel mm rpm : 500 3rd speed

travel mm : 3.70...4.30

rpm : 250 4th speed

travel mm : 1.20...1.60

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1075 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed Aneroid pressure h: 1000

Del.quantity : 137.0...141.0)

cm3 : 3.50 1000 : (6.00) Spread RATED SPEED 1st version Control lever position degrees: 58...66 Testina: 1st rack travel in: 11.50 Speed rpm : 1245...1260 2nd rack travel in: 4.00 Speed rpm : 1300...1330 4th rack travel in: 1400 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 13...21 Setting point w/out bumper spring : 250 rpm Rack travel in mm: 4.9 Testing: Speed rpm : 100 Minimum rack trave: 6.50 rpm : 250 Rack travel in mm : 4.80...5.00 CONSTANT REGULATION rpm : 330...420 Speed Aneroid/Altitude Compensator Test 1st version Setting rpm : 500 Speed hPa : 170 Pressure : 10.00...10.10 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 9.70...9.80 2nd pressure hPa : 650 Rack travel in m: 11.90...12.20 3rd pressure hPa : 1000 Rack travel in m: 12.50...12.60 START CUT-OUT 1/min : 170 (200) Speed

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1000 Speed rpm : 600 Del.quantity cm3/: 135.0...138.0 1000 s: (132.5...140.5) cm3 : 5.00Spread 1000 s: (7.0) Aneroid pressure h: 1000 Speed rpm: 800 Del.quantity cm3/: 138.0...141.0 1000 s: (135.5...143.5) Aneroid pressure h: 1000 : 1200 Speed rpm Del.quantity cm3/: 134.5...137.5 1000 s: (132.0...140.0) Aneroid pressure h: rpm_ : 500 Speed Del.quantity cm3/: 74.0...76.0 1000 s: (72.0...78.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.50 Speed rpm : 1245...1260

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.80...5.00
Del.quantity cm3/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm3 : 3.50

spread cms : 3.30 1000 s: (5.50)

Remarks:

: MAN #3-7036 Start-of-delivery mark at 14° angular displacement of the cam after start of delivery of cylinder 1

Note remarks

: MAN 7,2 V : 02.05.90 Test sheet Edition

Replace

: ISO-4113 Test wil

Combination no. : 0 403 456 110

Injection pump

Pump designation : PES6MW100/321RS1201 : 0 413 406 190

EP type number

Governor

Governor design. : RQ250/1200MW84-3 Governer no. : 0 420 082 043

Cust. part no. : 3-7047

Customer-spec. information Customer : MAN

: D 0826 LF02 Engine

1st version kW : 165.0 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina 0

: 172...175 pressure, bar

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.50...3.60 Prestroke mm : (3.45...3.65)

Rack travel in mm : 15.00...0.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

rpm : 10001st speed

Rack travel in mm : 12.50...12.60

Del.guantity cm3/: 13.7...13.9

100 s: (13.5...14.1)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 250.0 2nd speed Rack travel in mm: 5.4...5.6 Del.quantity cm3/: 1.6...2.0

100 s: (1.3...2.2)

cm3 : 0.5 Spread 100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1300 1st speed

: 8,40...8.80 travel mm

2nd speed rpm : 1260

travel mm : 6.60...6.80

rpm : 345 3rd speed

: 4.00...4.60 travel mm

rpm : 250 4th speed

: 1.80...2.20 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 1000

Rack travel in mm : 18.20...19.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000Speed

Aneroid pressure h: 1000 Del.quantity : 137.0...139.0 1000 : (135.0...141.0)

2nd pressure hPa : 550 cm3 : 3.50Spread Rack travel in m: 11.70...12.00 1000 : (6.00) 3rd pressure hPa : 1000 Rack travel in m: 13.10...13.20 RATED SPEED START CUT-OUT 1st version Control Lever position degrees: 30...38 Speed 1/min: 180 (200) FUEL DELIVERY CHARACTERISTICS Setting point: : 1000 Speed rpm Rack travel in mm: 19.0 1st version Aneroid pressure h: 1000 Testing: Speed rpm : 600 Del.quantity cm3/ : 135.0...138.0 1000 s: (132.5...140.5) 1st rack travel in: 11.50 Speed rpm : 1345...1360 2nd rack travel in: 4.00 cm3 : 5.00rpm : 1300...1330 Speed Spread 1000 s: (7.0) 4th rack travel in: 1400 Speed rpm: 0.00...1.00 Aneroid pressure h: 1000 Speed rpm : 800 Del.quantity cm3/: 138.0...141.0 1000 s: (135.5...143.5) LOW IDLE 1 Control lever Aneroid pressure h: 1000 position degrees: 7...15 Setting point w/out bumper spring : 1200 Speed rpm Del.quantity cm3/: 134.5...137.5 1000 s: (132.0...140.0) : 250 rpm Rack travel in mm: 5.5 Aneroid pressure h: rpm : 500 Speed Testing: Del.quantity cm3/: 74.0...76.0 1000 s: (72.0...78.0) Speed rpm: 100 Minimum rack trave: 7.00 : 250 Speed rpm Rack travel in mm : 5.40...5.60 BREAKAWAY TORQUE CONTROL Torque control curve - 1st version 1st version t speed rpm : 1000 Rack travel in m: 12.50...12.60 1mm rack travel less than 1st speed rpm : 600 full load rack tr: 11.50 2nd speed Rack travel in m: 13.00...13.10 Speed rpm : 1345...1360 3rd speed rpm : 800 Rack travel in m: 12.50...12.80 LOW IDLE 4th speed rpm : 1200 Rack travel in m: 12.50...12.60 Speed rpm Rack travel in mm : 5.40...5.60 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) Aneroid/Altitude Compensator Test cm3 : 5.00 1000 s: (7.00) Spread 1st version Remarks: Setting : 500 : MAN #3-7047 Speed rpm hPa : 170 Start-of-delivery mark = 13,5° after Pressure start of delivery cyl. 1. : 10.00...10.10 Rack travel mm Measurement Speed $1/\min : 500$

1st pressure hPa : -

Rack travel in m: 9.70...9.80

Note remarks

Test sheet : MAN 7,2 Q 1 : 02.05.90 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 403 456 111

Injection pump

Pump designation : PES6MW100/321RS1186

EP type number : D 413 406 168

Governor

Governor design. : RQ250/1200MW84-4

: 0 420 082 044 Governer no.

Cust. part no. : 3-7083

Customer-spec. information

: MAN Customer

: D 0826 LUH Engine

: 157.0 1st version kW : 2400 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.60...3.70 Prestroke mm ; (3.55...3.75)

Rack travel in mm : 15.00...0.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm : 10001st speed

Rack travel in mm : 14.70...14.80

Del.guantity cm3/: 12.6...12.8

100 s: (12.4...13.0)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm: 5.4...5.6 Del.quantity cm3/: 1.9...2.3

100 s: (1.6...2.5)

cm3 : 0.3Spread

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1280 : 9.50...9.90 travel mm

rpm : 1250 2nd speed

: 7.50...7.70 travel mm

rpm : 350 3rd speed

: 5.20...5.80 rpm : 250 travel mm

4th speed

: 2.20...2.60 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -2

rpm : 600

Rack travel in mm : 14.70...16.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

Aneroid pressure h: 1000

Del.quantity : 126.0...128.0 1000 : (124.0...130.0)

Rack travel in m: 12.20...12.30 cm3 : 3.50 1000 : (6.00) Spread 2nd pressure hPa : 400 Rack travel in m: 13.80...14.10 3rd pressure hPa : 1000 RATED SPEED Rack travel in m: 14.80...14.90 1st version START CUT-OUT Control lever position degrees: 38...46 1/min : 180 (200) Speed Setting point: FUEL DELIVERY CHARACTERISTICS Speed rom Rack travel in mm: 15.5 Testing: 1st version 1st rack travel in: 13.30 Aneroid pressure h: 1000 Speed rpm : 600 Del.quantity cm3/ : 126.5...129.5 1000 s: (124.0...132.0) Speed rpm : 1245...1260 2nd rack travel in: 4.00 rpm : 1290...1320 Speed cm3 : 5.004th rack travel in: 1450 Spread 1000 s: (7.0) Speed rpm : 0.00...1.00 Aneroid pressure h: 1000 rpm : 800 Speed LOW IDLE 1 Del.quantity cm3/: 126.5...129.5 1000 s: (124.0...132.0) Control lever position degrees: 8...16 Aneroid pressure h: 1000 Setting point w/out bumper spring : 1200 Speed rpm Speed rpm Del.quantity cm3/: 123.0...126.0 1000 s: (120.5...128.5) Rack travel in mm: 5.5 Aneroid pressure h: -Testina: rpm : 500 : 100 Speed Speed rom Del.quantity cm3/: 74.0...76.0 Minimum rack trave: 7.50 1000 s: (72.0...78.0) rpm : 250 Rack travel in mm : 5.40...5.60 TORQUE CONTROL BREAKAWAY Dimension a mm : 0.30 Torque control curve - 1st version 1st version 1st speed rpm : 1000 1mm rack travel less than Rack travel in m: 14.70...14.80 and speed rpm : 600 Rack travel in m: 14.80...14.90 full load rack tr: 13.30 2nd speed rpm : 1245...1260 Speed rpm : 800 3rd speed Rack travel in m: 14.80...14.90 STARTING FUEL DELIVERY 4th speed rpm : 1200 Rack travel in m: 14.30...14.40 rpm : 100 Speed Del.quantity cm3/: 130.0...140.0 Aneroid/Altitude 1000 s: (127.0...143.0) Compensator Test LOW IDLE 1st version Speed rpm : 250
Rack travel in mm : 5.40...5.60
Del.quantity cm3/: 19.0...23.0 Setting : 500 Speed rom hPa : 200 Pressure : 12.70...12.80 1000 s: (16.5...25.5) Rack travel mm cm3 : 3.50 Spread 1000 s: (5.50) Measurement 1/min: 500 Speed Remarks: : MAN #3-7083 1st pressure hPa : -

Note remarks

: CUM 8,3 C11 : 12.04.90 : 05.01.90 Test sheet Edition Replaces : ISO-4113 Test oil

Combination no. : n 403 466 110

Injection pump

Pump designation : PES6MW100/120RS1137

: D 413 406 131 EP type number

Governor

: RSV500...1250MW2A319 Governor design.

: 0 420 085 102 Governer no.

: 3915688 Cust. part no.

Customer-spec. information : CUMMINS/US Customer

: 6 CTA-8.3 L Engine

: 171.0 : 2500 1st version kW Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Openina |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.50...3.60 Prestroke mm

: (3.45...3.65) Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1250

Rack travel in mm : 12.80...12.90

Del.guantity cm3/: 13.4...13.6

100 s: (13.2...13.8)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 500.02nd speed Rack travel in mm: 6.5...6.7 Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2) cm3 : 0.3

Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...1.00

Governor spring pre-tension Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

: 134.0...136.0 Del.quantity

1000 : (132.0...138.0)

: 3.50 Spread cm3 1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 41...49

Setting point:

Speed rpm Rack travel in mm: 0.6

Testing:

1st rack travel in: 11.80

rpm : 1320...1330 Speed

2nd rack travel in: 4.00

rpm : 1350...1380 Speed

3rd rack travel in: 4.00

Speed rpm : 1360...1390 4th rack travel in: 1550

rom : 0.30...1.70Speed

LOW IDLE 1

Control lever

position degrees: 19...27

Setting point w/out bumper spring

rpm Speed : 500 Rack travel in mm: 6.1

Testina:

: 100 Speed rom Minimum rack trave: 19.00

rpm : 500

Rack travel in mm : 6.00...6.20

FUEL DELIVERY CHARACTERISTICS

1st version

: 750 rpm Speed

Del.quantity cm3/: 126.5...129.5

1000 s: (124.0...132.0)

cm3 : 5.00Spread

1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80

rpm : 1320...1330 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 125.0...145.0

1000 s: (122.0...148.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

rpm : 500 Speed

Rack travel in mm : 6.50...6.70

Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5)

cm3 : 3.50Spread

1000 s: (5.50)

Remarks:

: C.D.C #3915688 Start-of-delivery mark 11° cam angle

after start of delivery cyl. 1

Note remarks

Test sheet : CUM 8,3 Q
Edition : 12.04.90
Replaces : 05.01.90
Test oil : ISO-4113

Combination no. : 0 403 466 123

Injection pump

Pump designation : PES6MW100/120RS1137-

2

EP type number : 0 413 406 180

Governor

Governor design. : RSV500...1250MWZA319

-16

Governer no. : 0 420 085 130

Cust. part no. : 3918357

Customer-spec. information Customer : CUMMINS

Engine : 6 CTA-8.3 L

1st version kW : 171.0 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 017

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60

: (3.45...3.65) Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1250

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 13.4...13.6

100 s: (13.2...13.8)

Spread cm3:0.3

100 s: (0.6)

2nd speed rpm : 500.0 Rack travel in mm : 6.5...6.7 Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del.quantity : 134.0...136.0 1000 : (132.0...138.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 41...49

Setting point:

Speed rpm Rack travel in mm: 0.6

Testing:

1st rack travel in: 11.80

rpm : 1320...1330 Speed

2nd rack travel in: 4.00

rpm : 1350...1380 Speed

3rd rack travel in: 4.00

rpm : 1360...1390 Speed

4th rack travel in: 1550

rpm : 0.30...1.70Speed

LOW IDLE 1 Control lever

position degrees: 19...27

Setting point w/out bumper spring

: 500 rpm Rack travel in mm: 6.1

Testing:

: 100 Speed rpm Minimum rack trave: 19.00 rpm : 500

Rack travel in mm : 6.00...6.20

FUEL DELIVERY CHARACTERISTICS

1st version

: 750 Speed rpm

Del.quantity cm3/: 126.5...129.5 1000 s: (124.0...132.0)

cm3 : 5.00 Spread 1000 s: (7.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.80

rpm : 1320...1330 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 125.0...145.0 1000 s: (122.0...148.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

: 500 Speed rpm

E08

Rack travel in mm : 6.50...6.70 Del.quantity cm3/ : 16.0...20.0

1000 s: (13.5...22.5)

cm3 : 3.50Spread 1000 s: (5.50)

Remarks:

: C.D.C #3918357 Start-of-delivery mark 11° cam angle

after start of delivery cyl. 1

Note remarks

Test sheet : CUM 8,3 I : 05.03.90 Edition : 24.11.89 Replaces : ISO-4113 Test oil

: 0 403 466 124 Combination no.

Injection pump

Pump designation : PES6MW100/120RS1178

EP type number : 0 413 406 160

Governor

: RSV425...1250MWZA332 Governor design.

-2

: 0 420 085 131 Governer no.

Cust. part no. : 3913758

Customer-spec. information Customer : CUMMINS

: 6 CT Engine

: 174.0 1st version kW : 1800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.45...3.55 Prestroke mm

: (3.40...3.60)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 13.80...13.90

bel.quantity cm3/: 14.2...14.4

100 s: (14.0...14.6)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 425.0 2nd speed Rack travel in mm : 5.4...5.6

Del.quantity cm3/: 1.1...1.5

100 s: (0.8...1.7)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...1.00

Governor spring pre-tension Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 900 Speed

Aneroid pressure h: 900

Del.quantity : 142.0...144.0

1000 : (140.0...146.0)

: 3.50 : (6.00) Spread cm3

1000

RATED SPEED

1st version

Control lever position degrees: 42...50 Setting point: Speed rpm Rack travel in mm: 0.6 Testing: 1st rack travel in: 12.80 Speed rpm : 940...950 2nd rack travel in: 4.00 Speed rpm : 1090...1120 3rd rack travel in: 4.00 rpm : 1100...1130 Speed 4th rack travel in: 1250 rpm : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 25...33 Setting point w/out bumper spring rpm : 425 Rack travel in mm: 5.0 Testing: : 100 Speed rpm Minimum rack trave: 19.00 : 425 rpm Rack travel in mm : 4.90...5.10 Rack travel in mm : 2.00 rpm : 525...585 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 500 Pressure hPa : -: 10.80...11.00 Rack travel mm Measurement $1/\min : 500$ Speed 1st pressure hPa : 305 Rack travel in m: 11.60...11.70 2nd pressure hPa : 465 Rack travel in m: 12.80...13.10

3rd pressure hPa : 900 Rack travel in m: 13.80...13.90 FUEL DELIVERY CHARACTERISTICS

1st version : 500 Speed rpm Del.quantity cm3/: 92.5...94.5 1000 s: (90.5...96.5) **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 12.80 rpm : 940...950 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity_cm3/ : 160.0...180.0 1000 s: (155.0...185.0) Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm Rack travel in mm : 5.40...5.60 Del.quantity cm3/: 11.0...15.0 1000 s: (8.5...17.5) cm3 : 3.50 Spread 1000 s: (5.50)

Remarks:

: C.D.C #3913758 Start-of-delivery mark at 14° angular displacement of the cam after start of delivery of cylinder 1

Note remarks

Test sheet : MB 6,0 D 66 : 06.04.90 **Edition** : 31.03.89 Replaces Test oil : ISO-4113

: 0 403 476 070 Combination no.

Injection pump

Pump designation : PES6MW100/720RS1172

: 0 413 406 155 EP type number

Governor

Governor design. : RSV350...1300MW0A329

: 0 420 085 116 Governer no.

Customer-spec. information : DB-NKW Customer

: OM 366 LA Engine

: 170.0 1st version kW : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening .

pressure, bar : 172...175

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.70...3.80 Prestroke mm

: (3.65...3.85)

Rack travel in mm : 19.00...21.00 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1280 1st speed

Rack travel in mm : 14.70...14.80

Del.quantity cm3/: 10.8...11.0

100 s: (10.6...11.2)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 5.9...6.1 Del.quantity cm3/: 1.0...1.4

100 s: (0.7...1.6) cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1280 Aneroid pressure h: 1000

: 108.0...110.0 Del.quantity 1000 : (106.0...112.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 96...104

Setting point:

: 800 Speed rpm Rack travel in mm: 0.6

Testing:

1st rack travel in: 13.70

Speed rpm : 1330...1340

2nd rack travel in: 4.00

rpm : 1410...1440 Speed 4th rack travel in: 1500 rom : 0.30...1.70Speed LOW IDLE 1 Control lever position degrees: 62...70 Setting point w/out bumper spring rpm : 350 Speed Rack travel in mm: 6.0 Testing: Speed : 100 man Minimum rack trave: 7.60 Speed rpm: 350 Rack travel in mm : 5.90...6.10 SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rom Pressure hPa : -Rack travel mm : 11.70...11.80 Measurement 1/min: 500 Speed 1st pressure hPa : 350 Rack travel in m: 12.60...12.80 2nd pressure hPa : 500 Rack travel in m: 13.70...13.90 3rd pressure hPa : 1000 Rack travel in m: 14.70...14.80 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 : 900 Speed rpm Del.quantity cm3/: 101.0...104.0 1000 s: (98.5...106.5) Spread cm3 : 5.00 1000 s: (7.0) Aneroid pressure h: -: 500 Speed rpm

Del.quantity cm3/: 42.0...44.0

1000 s: (40.0...46.0) cm3 : 3.50

1000 s: (6.00)

1st version 1mm rack travel less than full load rack tr: 13.70 rpm : 1330...1340 Speed STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 100.0...110.0 1000 s: (97.0...113.0) LOW IDLE rpm : 350 Speed Rack travel in mm : 5.90...6.10
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50 1000 s: (5.00) Remarks: Test hydr. locking device for starting with 500...1000 hPa air pressure.

Spread

BREAKAWAY

Note remarks

: MB 6,0 0 75 : 19.03.90 Test sheet Edition : 15.08.89 Replaces : ISO-4113 Test oil

: 0 403 476 075 Combination no.

Injection pump

Pump designation : PES6MW100/720RS1130

: 0 413 406 122 EP type number

Governor

: RSV350...750MW0A336-Governor design.

: 0 420 085 124 Governer no.

Customer-spec. information Customer : MB-NFZ

Engine : 0M366A

: 84.0 1st version kW : 1500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.70...3.80 Prestroke mm

: (3.65...3.85)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasina

 $\pm 0.50 (0.75)$ Tolerance + - °

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 8.0...8.2

100 s: (7.8...8.4)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 350.0 2nd speed Rack travel in mm : 6.5...6.8 Del.quantity cm3/: 0.9...1.3

100 s: (0.7...1.5)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Speed Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

: 80.0...82.0 Del.quantity 1000 : (78.0...84.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 74...82

Setting point:

rpm Rack travel in mm: 0.6

Testing:

1st rack travel in: 11.00 rpm : 750...755 Speed 2nd rack travel in: 4.00

rpm : 775...788 Speed

4th rack travel in: 800 rpm : 0.30...1.70 Speed LOW IDLE 1 Control lever position degrees: 61...69 Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm: 6.6 Testing:

: 100 Speed rpm Minimum rack trave: 19.00 Speed rpm : 350

Rack travel in mm : 6.50...6.80

SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 88.0...98.0 1000 s; (85.0...101.0)

LOW IDLE

rpm : 350 Speed Rack travel in mm : 6.50...6.80

Del.quantity cm3/: 9.0...13.0 1000 s: (7.0...15.0) Spread cm3: 3.50

1000 s: (5.50)

Remarks:

Observe VDT-I-420/120

Note remarks

Test sheet : MB 6,0 D 74 Edition : 01.02.90 : 15.08.89 Replaces : ISO-4113 Test oil

Combination no. : 0 403 476 078

Injection pump

Pump designation : PES6MW100/720RS1129

EP type number : 0 413 406 121

Governor

Governor design. : RSV350...750MWOA336

: 0 420 085 127 Governer no.

Customer-spec. information Customer : DB-NKW

: OM 366 LA Engine

1st version kW : 94.0 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.70...3.80 Prestroke mm : (3.65...3.85)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasina

: 0.50 (0.75) Tolerance + - °

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 12.50...12.60

Del.quantity cm3/: 8.5...8.7

100 s: (8.3...8.9)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 350.02nd speed Rack travel in mm : 5.8...6.8 Del.quantity cm3/: 0.9...1.3

100 s: (0.6...1.5)

cm3 : 0.3 100 s: (0.5) Spread

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm: 0.30...1.00

Governor spring pre-tension Click setting x : 2.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

Del.quantity : 85.0...87.0

1000 : (83.0...89.0)

: 3.50 cm3 Spread

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 74...82

Setting point:

rpm Rack travel in mm: 0.6

Testing:

1st rack travel in: 11.5

rpm : 750...755 Speed

2nd rack travel in: 4.00 Speed rpm: 775...788 4th rack travel in: 850

rpm : 0.30...1.70 Speed

LOW IDLE 1 Control lever

position degrees: 60...68

Setting point w/out bumper spring

rpm : 350 Speed Rack travel in mm: 6.3

Testing:

rpm : 100 Speed Minimum rack trave: 19.00 Speed rpm : 350 Rack travel in mm : 5.80...6.80

SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 83.0...98.0 1000 s: (85.0...101.0)

LOW IDLE

Speed rpm : 350 Rack travel in mm : 5.80...6.80

Del.quantity cm3/: 9.0...13.0 1000 s: (6.5...15.5) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

Observe VDT-I-420/120

Note remarks

Test sheet : MB 6,0 H 1
Edition : 30.03.90
Replaces : 02.02.90
Test oil : ISO-4113

Combination no. : 0 403 476 080

Injection pump

Pump designation : PES6MW100/720RS1191 EP type number : 0 413 406 179

Governor

Governor design. : RSV350...1300MWOA329

-6

Governer no. : 0 420 085 136

Customer—spec. information Customer : MB-NFZ

Engine : OM 366 LA

1st version kW : 170.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening .

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

BASIC SETTING

1st speed rpm: 1280

Rack travel in mm : 14.00...14.10

Del.quantity cm3/: 11.2...11.4

100 s: (11.0...11.6)

Spread cm3: 0.3

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 6.0...6.2 Del.quantity cm3/ : 0.9...1.3

100 s: (0.6...1.5)

Spread cm3 : 0.3 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 5.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1280 Aneroid pressure h: 1000

Del.quantity : 112.0...114.0

1000 : (110.0...116.0) cm3 : 3.50

Spread cm3 : 3.50 1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 105...113

Setting point:

Speed rpm : 800 Rack travel in mm : 0.6

Testing:

1st rack travel in: 13.00 rpm : 1330...1340 Speed 2nd rack travel in: 4.00 Speed rpm : 1420...1450 4th rack travel in: 1550 rpm : 0.30...1.70Speed LOW IDLE 1 Control lever position degrees: 75...83 Setting point w/out bumper spring rpm : 350° Rack travel in mm: 6.1 Testing: rpm : 100 Speed Minimum rack trave: 19.00 rpm : 350 Rack travel in mm : 6.00...6.20 SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rom hPa : -Pressure : 10.10...10.20 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : 350 Rack travel in m: 11.30...11.40 2nd pressure hPa : 500 Rack travel in m: 12.80...13.10 3rd pressure hPa : 1000 Rack travel in m: 14.00...14.10 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 : 600 Speed rpm Del.quantity cm3/: 101.0...104.0 1000 s: (98.5...106.5) cm3 : 5.00 Spread 1000 s: (7.0) Aneroid pressure h: -: 500 rpm Speed Del.quantity cm3/: 35.0...37.0 1000 s: (33.0...39.0)

1st version 1mm rack travel less than

full load rack tr: 13.00 Speed rpm : 1330...1340

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 100.0...110.0 1000 s: (97.0...113.0)

LOW IDLE

Remarks:

Test hydr. Locking device for starting with 500...1000 hPa air pressure.

Note remarks

: LIE 8,4 C Test sheet Edition : 05.03.90

Replaces

Test oil : ISO-4113

Combination no. : 0 403 476 081

Injection pump

Pump designation : PES6MW100/720RS1196

EP type number : 0 413 406 184

Governor

Governor design. : RSV350...1050MW1A338 Governor no. : 0 420 085 138

Customer-spec. information : LIFBHERR Customer

: D 916 T Engine

: 170.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 049

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.40...3.50 Prestroke mm

: (3.35...3.55)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm : 10501st speed

Rack travel in mm : 11.20...11.30

Del.guantity cm3/: 13.9...14.1

100 s: (13.7...14.3)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 5.9...6.1 Del.quantity cm3/: 0.9...1.3

100 s: (0.6...1.5)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 5.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050Speed

Aneroid pressure h: 1000

: 139.0...141.0 Del.quantity 1000 : (137.0...143.0)

: 3.50 cm3 Spread

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 105...113

Setting point:

Speed rpm Rack travel in mm : 0.6

Testing:

1st rack travel in: 10.20

: 1090...1100 Speed rpm 2nd rack travel in: 4.00 : 1130...1160 Speed rpm 4th rack travel in: 1400 rpm : 0.30...1.70Speed LOW IDLE 1 control lever position degrees: 75...83 Setting point w/out bumper spring : 350 rpm Rack travel in mm: 6.0 Testina: Speed : 100 rpm Minimum rack trave: 19.00 rpm : 350 Rack travel in mm : 5.90...6.10 SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rom hPa : -Pressure : 10.00...10.10 Rack travel mm Measurement $1/\min : 500$ Speed 1st pressure hPa : 350 Rack travel in m: 11.30...11.40 2nd pressure hPa : 500 Rack travel in m: 12.80...13.10 3rd pressure hPa : 1000 Rack travel in m: 11.20...11.30 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 : 500 Speed rpm Del.quantity cm3/: 133.0...136.0 1000 s: (130.5...138.0) cm3 : 5.00Spread 1000 s: (7.0) Aneroid pressure h: 1000 Speed : 800 rpm Del.quantity cm3/: 140.0...143.0 1000 s: (137.5...145.5) Aneroid pressure h: -: 500 Speed rpm

Del.quantity cm3/: 119.0...121.0

1000 s: (117.0...123.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.20

Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 120.0...130.0 1000 s: (117.0...133.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm: 350

Rack travel in mm : 5.90...6.10 Del.quantity cm3/: 9.0...13.0 1000 s: (6.5...15.5)

Spread cm3 : 3.50 1000 s: (5.00)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

E20

Note remarks

Test sheet : KHD 13,4D17 : 30.03.90 Edition Replaces : 12.02.90 Test oil : ISO-4113

: 0 403 548 036 Combination no.

Injection pump

Pump designation : PE8MW100/720LS1128

: 0 413 508 103 EP type number

Governor

: RQV425...900MW76-1 Governor design.

: 0 420 083 210 Governer no.

Customer—spec. information Customer : KHD

: BF 8L 513 Engine

1st version kW : 160.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 740 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.10...3.20 Prestroke mm : (3.05...3.25)

Rack travel in mm : 9.00...12.00 Firing order : 1-8-7-2-6-5-

Phasing : 0-45-90-135-180-225-270-315

: 0.50 (0.75) Tolerance + - °

BASIC SETTING

rpm: 875 1st speed

Rack travel in mm : 10.50...10.60

Del.guantity cm3/: 10.3...10.5

100 s: (10.1...10.7)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 425.0 2nd speed Rack travel in mm : 5.8...6.0 Del.quantity cm3/ : 1.3...1.7

100 s: (1.0...1.9)

cm3 : 0.3 Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1000

9.50...10.10 travel mm

950 2nd speed rpm

: 8.70...8.90 travel mm

: 600 3rd speed rpm

: 3.90...4.50 travel mm

: 425 4th speed rpm travel mm : 1.60...2.00

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 925

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed : 875 rpm

Del.quantity : 103.0...105.0 1000 : (101.0...107.0)

: 3.50 cm3 Spread

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 49...57

Testina:

1st rack travel in: 9.50 rpm : 915...925 Speed 2nd rack travel in: 4.00

rpm : 955...985 Speed 4th rack travel in: 1050

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 18...26

Setting point w/out bumper spring

rpm : 425 Rack travel in mm: 5.9

Testina:

rpm : 100 Speed Minimum rack trave: 6.50 rpm : 425 Speed

Rack travel in mm : 5.80...6.00

CONSTANT REGULATION

: 430...490 Speed rpm

TORQUE CONTROL

: 0.70 Dimension a mm

Torque control curve - 1st version

1st speed rpm : 875

Rack travel in m: 10.50...10.60

2nd speed rpm : 600

Rack travel in m: 11.20...11.30 d speed rpm : 750

3rd speed

Rack travel in m: 10.80...11.00

START CUT-OUT

1/min : 350 (370) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

: 600 Speed rpm

Del.quantity cm3/: 108.5...111.5

1000 s: (106.0...114.0)

cm3 : 5.00Spread

1000 s: (7.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.50

rpm : 915...925 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 140.0...150.0 1000 s: (137.0...153.0)

LOW IDLE

: 425 Speed rpm

Rack travel in mm : 5.80...6.00 Del.quantity cm3/ : 13.0...17.0

1000 s: (10.5...19.5)

cm3 : 3.50Spread

1000 s: (5.50)

Remarks:

E22

Note remarks

: KHD 13,4 d Test sheet : 02.05.90 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 403 548 037

Injection pump

Pump designation : PE8MW100/720LS1128 : 0 413 508 103

EP type number

Governor

Governor design. : RQV450...1150MW70-2

: 0 420 083 211 Governer no.

Customer-spec. information Customer : KHD

: BF 8L 513 Engine

: 160.0 1st version kW : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test Lines : 1 680 740 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.10...3.20 Prestroke mm

: (3.05...3.25)

Rack travel in mm : 9.00...12.00

: 1-8-7-2-6-5-Firing order

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1150 1st speed

Rack travel in mm : 11.00...11.10

Del.quantity cm3/: 11.4...11.6

100 s: (11.2...11.8)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 450.02nd speed Rack travel in mm : 5.6...5.8 Del.quantity cm3/ : 1.3...1.7 100 s: (1.0...1.9)

cm3 : 0.3Spread

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1200 1st speed : 9.00...9.40 travel mm

rpm : 1000 2nd speed

: 6.20...6.40 travel mm

rpm : 600 3rd speed : 2.50...3.10 travel mm

rpm : 450 4th speed

: 1.20...1.60 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1150 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1150 Speed

: 114.0...116.0 Del.quantity

1000 : (112.0...118.0)

: 3.50 cm3 Spread 1000 : (6.00)

RATED SPEED

1st version Control lever position degrees: 52...60 Testing: 1st rack travel in: 10.00 rpm : 1190...1200 Speed 2nd rack travel in: 4.00 rpm : 1230...1260 Speed 4th rack travel in: 1320 Speed rpm: 0.00...1.00 LOW IDLE 1 Control lever position degrees: 15...23 Setting point w/out bumper spring rpm : 450 Speed Rack travel in mm: 5.7 Testing: Speed : 100 rom Minimum rack trave: 7.50 rpm : 450 Speed Rack travel in mm : 5.60...5.80 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1150 Rack travel in m: 11.00...11.10 START CUT-OUT 1/min: 350 (370) Speed **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.00 rpm : 1190...1200 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 140.0...150.0 1000 s: (137.0...153.0) LOW IDLE : 450 Speed rpm Rack travel in mm : 5.60...5.80 Del.quantity cm3/: 13.0...17.0 1000 s: (10.5...19.5) Spread cm3: 3.50 1000 s: (5.50) Remarks:

E24

Note remarks

: CUM 8,3 b7 Test sheet : 01.02.90 Edition : 1.9.88 Replaces : ISO-4113 Test oil

Combination no. : 9 400 230 103

Injection pump

Pump designation : PES6A100D410RS2691-2 : 9 410 230 028

EP type number

Governor Governor design. : RQV350...1100AB1227R

: 9 420 231 015 Governer no.

Customer-spec. information Customer : C.D.C.

: 6 CT 8.3 Engine

: 156.6 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Openina

: 207...210 pressure, bar

Orifice plate

: 0,6 diameter mm

: 1 680 750 014 Test lines

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 10.50

: 1- 5- 3- 6- 2- 4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 12.60...12.70

Del.quantity cm3/: 12.6...12.8

100 s: (12.4...13.0)

cm3 : 0.4Spread

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 5.4...5.6

Del.quantity cm3/: 1.8...2.2

100 s: (1.5...2.4) cm3 : 0.6

Spread 100 s: (0.8)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1100

: 7.70...7.70 travel mm

2nd speed rpm : 1150

travel mm : 8.00...8.60

rpm : 1290 3rd speed

: 9.50...10.10 rpm : 350_ travel mm

4th speed

: 1.20...1.60 travel mm

rpm : 600 5th speed

travel mm : 3.90...4.50

GUIDE SLEEVE POSITION Control-lever position

Degree: ?

rpm : ?

Rack travel in mm : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed Aneroid pressure h: 900

Del.quantity : 126.5...128.5 1000 : (124.5...130.5)

: 4.00 Spread cm3 1000 : (6.50)

RATED SPEED

1st version Control Lever

position degrees: 60...68

Testing:

1st rack travel in: 11.60 rpm : 1145...1155 Speed 2nd rack travel in: 4.00

rpm : 1260...1290 Speed

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 9...17 Speed rpm : 350
Rack travel in mm : 5.40...5.60

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 500 rom hPa : 900 Pressure

Rack travel mm : 12.60...12.70

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 10.10...10.30

2nd pressure hPa : 405

Rack travel in m: 10.90...11.00

3rd pressure hPa : 535

Rack travel in m: 11.80...12.20

START CUT-OUT

1/min: 260 (280) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 500

Del.quantity cm3/: 79.0...83.0 1000 s: (77.0...85.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.60

rpm : 1145...1155 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 165.0...185.0 1000 s: (160.0...190.0)

Rack travel in mm : 15.30...15.70

LOW IDLE

Speed rpm: 350
Rack travel in mm: 5.40...5.60
Del.quantity cm3/: 18.0...22.0
1000 s: (15.5...24.5)

Spread cm3 : 6.001000 s: (8.00)

Remarks:

: C.D.C. # 3912645

Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark is at 7° after start of delivery.

E26

Note remarks

: CUM 8,3 k 1 : 01.02.90 Test sheet Edition Replaces : 7.4.89 : ISO-4113 Test oil

: 9 400 230 106 Combination no.

Injection pump

Pump designation : PES6A100D320/3RS2691

: 9 410 230 025 EP type number

Governor

: RSV400...1050A0C2216 Governor design.

-1R

: 9 420 234 154 Governer no.

Customer-spec. information Customer : C.D.C.

: 6 CT 8.3 Engine

1st version kW : 141.7 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.6

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.80...2.90 Prestroke mm : (2.75...2.95)

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 11.90...12.00

Del.guantity cm3/: 11.5...11.7

100 s: (11.3...11.9)

cm3 : 0.4Spread

100 s: (0.6)

rpm : 400.02nd speed Rack travel in mm : 5.8...6.0 Del.quantity cm3/: 1.6...2.0

100 s: (1.3...2.2)

cm3 : 0.6Spread 100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

: 115.0...117.0 Del.quantity 1000 : (113.0...119.0)

: 4.00 cm3

Spread : (6.50) 1000

RATED SPEED

1st version

Control lever

position degrees: 42...50

Testina:

1st rack travel in: 10.90

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

rpm : 1145...1175 Speed

4th rack travel in: 1200

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 23...31

Setting point w/out bumper spring

rpm : 400 Rack travel in mm: 5.4

Testina:

Speed rpm : 100 Minimum rack trave: 19.00 : 400 rpm

Rack travel in mm : 5.80...6.00

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1050 1st speed

Rack travel in m: 11.90...12.00

2nd speed rom: 750

Rack travel in m: 13.20...13.40

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 750 Speed

Del.quantity cm3/: 134.0...138.0 1000 s: (132.0...140.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.90

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 135.0...155.0

1000 s: (132.0...158.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

rpm : 400 Speed

Rack travel in mm : 5.80...6.00

Del.quantity cm3/: 16.0...20.0

1000 s: (13.5...22.5)

cm3 : 6.00

1000 s: (8.00)

Remarks:

: C.D.C. # 3915951

Adjust stop lever to 0.5...1.0 mm before stop.

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

Spread

Note remarks

: CUM 8,3 b 3 : 01.02.90 Test sheet Edition : 28.9.89 Replaces : ISO-4113 Test oil

Combination no. : 9 400 230 107

Injection pump

: PES6A100D320/3RS2691 Pump designation

: 9 410 230 028 EP type number

Governor

Governor design. : RQV350...1200AB1233R

Governer no. : 9 420 231 018

Customer-spec. information Customer : C.D.C

: 6CT830 Engine

: 157.0 1st version kW : 2400 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Openina .

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 9 681 271 029

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.80...2.90 : (2.75...2.95) Prestroke mm

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1200 1st speed

Rack travel in mm : 10.80...10.90

Del.quantity cm3/: 11.3...11.5

100 s: (11.1...11.7)

cm3 : 0.4Spread

100 s: (0.6)

rpm : 350.02nd speed

Rack travel in mm: 4.6...4.8 Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.2)

cm3 : 0.6 Spread

100 s: (0.8)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

: 0.00...0.20 travel mm

rpm : 350 2nd speed

travel mm : 1.00...1.50

3rd speed : 450 rpm

: 1.90...2.40 travel mm

: 1200 4th speed rpm

: 6.90...6.90 travel mm

: 1350 5th speed rpm

: 8.15...8.65 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1435 Speed

Rack travel in mm : 6.70...9.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1200 Speed

Aneroid pressure h: 700

Del.quantity : 113.0....117.0)

cm3 : 4.00 1000 : (6.50) Spread

RATED SPEED

1st version Control Lever

position degrees: 40...46

Testing:

1st rack travel in: 9.80

rpm : 1240...1250 Speed

2nd rack travel in: 4.00

rpm : 1315...1345 Speed

4th rack travel in: 1400

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 9...15 : 350

rpm Rack travel in mm : 4.60...4.80

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm hPa : 240 Pressure

: 9.70...9.80 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 9.30...9.50

2nd pressure hPa : 333 Rack travel in m: 10.20...10.60

START CUT-OUT

1/min: 290 (300) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 84.5...88.5

1000 s: (82.5...90.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.80

Speed rpm : 1240...1250

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 150.0...170.0 1000 s: (145.0...175.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350 Rack travel in mm : 4.60...4.80 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5)

cm3 : 6.00Spread

1000 s: (8.00)

Remarks:

: C.D.C. # 3908558

Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

Adjust stop lever to 0.5...1.0 mm before stop.

Note remarks

: CUM 8,3 b10 Test sheet : 06.03.90 Edition

Replaces

: ISO-4113 Test oil

: 9 400 230 107JA Combination no.

Injection pump

: PES6A100D320/3RS2691 Pump designation

EP type number : 9 410 230 028

Governor

: RQV350...1050AB1233-Governor design.

: 9 420 231 Governer no.

Cust. part no. : 3279419

Customer-spec, information Customer : C.D.C

: 6CT830 Engine

1st version kW : 153.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 9 681 271 029 Test Lines

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.80...2.90 Prestroke mm

: (2.75...2.95) Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 11.6...11.8

100 s: (11.4...12.0)

cm3 : 0.4Spread

100 s: (0.6)

rpm : 350.02nd speed

Rack travel in mm : 6.3...6.5 Del.quantity cm3/: 3.3...3.9

100 s: (3.1...4.1)

cm3 : 0.6 Spread

100 s: (0.8)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

: 0.00...0.20 travel mm

rpm : 350 2nd speed travel mm : 1.00...1.50

3rd speed rpm : 450

: 1.90...2.40 travel mm

rpm : 1200 4th speed

travel mm : 6.90...6.90

rpm : 1350 5th speed

travel mm : 8.15...8.65

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1435

Rack travel in mm : 6.70...9.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050Speed

Aneroid pressure h: 900

: 116.0...118.0 Del.quantity 1000 : (114.0...120.0)

: 4.00 Spread cm3

: (6.50) 1000

RATED SPEED

1st version Control Lever

position degrees: 35...43

Testina:

1st rack travel in: 10.10 Speed rpm : 1090...1100

2nd rack travel in: 4.00 rpm : 1195...1125 Speed

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 11...19 rpm : 350

Rack travel in mm : 6.30...6.50

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm hPa : 900 Pressure

: 11.10...11.20 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.30...9.50

2nd pressure hPa : 300

Rack travel in m: 9.80...9.90

3rd pressure hPa : 440

Rack travel in m: 10.50...10.90

START CUT-OUT

1/min: 290 (300) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -Speed : 500 rpm

Del.quantity cm3/: 77.5...81.5 1000 s: (75.5...83.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 150.0...170.0 1000 s: (145.0...175.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350 Rack travel in mm : 6.30...6.50 Del.quantity cm3/: 33.0...39.0 1000 s: (31.0...41.0)

cm3 : 6.00 Spread

1000 s: (8.00)

Remarks:

Start-of-delivery mark 11° cam angle

after start of delivery cyl. 1

Adjust stop lever to 0.5...1.0 mm

before stop.

Note remarks

Test sheet : DEE 7,6 h14 Edition : 01.02.90 : 26.6.89 Replaces : ISO-4113 Test oil

Combination no. : 9 400 230 108

Injection pump

Pump designation : PES6A100D410RS2676-1

: 9 410 230 024 EP type number

Governor

: RSV450...1050A2C2204 Governor design.

-1L

: 9 420 234 163 Governer no.

Customer-spec. information

: JOHN DEERE Customer

Engine : 6466 AT

1st version kW : 120.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.45...2.55 Prestroke mm

: (2.40...2.60)

Rack travel in mm : 10.50 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no.

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 10.00...10.10

Del.guantity cm3/: 10.4...10.6

100 s: (10.2...10.8)

Spread cm3 : 0.4

100 s: (0.6)

rpm : 450.0 2nd speed Rack travel in mm: 5.3...5.5 Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.2)

cm3 : 0.6 Spread

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Speed Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

: 104.0...106.0 Del.quantity 1000 : (102.0...108.0)

: 4.00 Spread cm3

: (6.50) 1000

RATED SPEED

1st version Control lever

position degrees: 43...51

Testing:

1st rack travel in: 9.00

rpm : 1095...1105 Speed

2nd rack travel in: 4.00

rpm : 1155...1165 Speed

3rd rack travel in: 4.00

rpm : 1160...1180 Speed

4th rack travel in: 1250

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 23...31

Setting point w/out bumper spring

rpm : 450 Speed Rack travel in mm: 4.9

Testing:

: 100 Speed rpm Minimum rack trave: 19.00 Speed rpm : 450

Rack travel in mm : 5.30...5.50

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 10.00...10.10

2nd speed rpm : 650

Rack travel in m: 10.60...10.80

3rd speed rpm : 900

Rack travel in m: 10.00...10.10

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 650 Speed

Del.quantity cm3/: 109.0...113.0

1000 s: (107.0...115.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.00

rpm : 1095...1105 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 170.0...190.0 1000 s: (165.0...195.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

rpm : 450 Speed

Rack travel in mm: 5.30...5.50 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5)

cm3 : 6.00Spread 1000 s: (8.00)

Remarks:

: JOHN DEERE # RE29233

Start-of-delivery mark at control-rod travel 10.5 mm and 15° after start of

delivery.

APPLICATION

Excavator

Note remarks

: CUM 8,3 a60 : 28.09.89 Test sheet Edition : 2.5.89 Replaces : ISO-4113 Test oil

Injection pump

Combination no.

Pump designation : PES6A100D320/3RS2691

: 9 410 230 030 EP type number

Governor

: RSV450...1100A0C2190 Governor design.

-41R

: 9 400 230 109

: 0 420 233 247 Governer no.

Customer-spec. information : C.D.C. Customer

: 6CT830 Engine

: 117.1 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 014 Test lines

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm: 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 10.20...10.30

Del.quantity cm3/: 8.9...9.1

100 s: (8.7...9.3)

cm3 : 0.4Spread

100 s: (0.6)

rpm : 450.0 2nd speed Rack travel in mm: 5.7...5.9

Del.quantity cm3/: 1.6...2.0

100 s: (1.3...2.2)

cm3 : 0.6 Spread 100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm: 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

: 89.0...91.0 Del.quantity

1000 : (87.0...93.0)

: 4.00 cm3 Spread

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 47...55

Testing:

F07

1st rack travel in: 9.20
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1190...1220
3rd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1300
Speed rpm : 0.30...1.40
LOW IDLE 1
Control lever
position degrees: 29...37
Setting point w/out bumper spring

Speed rpm : 450 Rack travel in mm : 5.3

Testing:

Speed rpm: 100
Minimum rack trave: 19.00
Speed rpm: 450
Rack travel in mm: 5.70...5.90
Rack travel in mm: 2.00
Speed rpm: 525...585

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 10.20...10.30
2nd speed rpm : 750

Rack travel in m: 10.80...11.00

FUEL DELIVERY CHARACTERISTICS

1st version Speed rpm : 750 Del.quantity cm3/: 90.5...94.5 1000 s: (88.5...96.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.20 Speed rpm : 1140...1150

STARTING FUEL DELIVERY

LOW IDLE

Speed rpm : 450 Rack travel in mm : 5.70...5.90 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5)

Spread cm3 : 6.00 1000 s: (8.00)

Remarks:

: C.D.C. # 3915683

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

F08

Note remarks

: CUM 8,3 a61 Test sheet : 01.02.90 Edition : 7.4.89 Replaces

: ISO-4113 Test oil

Combination no. : 9 400 230 110

Injection pump

: PES6A100D320/3RS2691 Pump designation

: 9 410 230 030 EP type number

Governor

Governor design. : RSV450...1100A0C2190

-42R

: 0 420 233 248 Governer no.

Customer-spec. information : C.D.C. Customer

Engine : 6CT830

: 150.6 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Openina

: 207...210 pressure, bar

Orifice plate

: 0,6 diameter mm

: 1 680 750 014 Test lines

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.80...2.90 Prestroke mm : (2.75...2.95)

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 11.8...12.0

100 s: (11.6...12.2)

cm3 : 0.4 Spread

100 s: (0.6)

rpm : 450.0 2nd speed

Rack travel in mm : 5.7...5.9 Dei.guantity cm3/: 1.6...2.0

100 s: (1.3...2.2)

cm3 : 0.6Spread 100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

118.5...120.5 1000 : (116.5...122.5) Del.quantity

: 4.00 Spread cm3

1000 : (6.50)

RATED SPEED

1st version Control lever

position degrees: 42...50

Testina:

1st rack travel in: 11.10

Speed rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1195...1225 4th rack travel in: 1300

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 22...30

Setting point w/out bumper spring

rpm : 450 Rack travel in mm: 5.3

Testing:

rpm : 100 Speed Minimum rack trave: 19.00

rpm : 450 Speed

Rack travel in mm : 5.70...5.90

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 12.10...12.20 2nd speed rpm : 750

Rack travel in m: 13.20...13.40

FUEL DELIVERY CHARACTERISTICS

1st version

: 750 Speed rpm

Del.quantity cm3/: 133.0...137.0

1000 s: (131.0...139.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.10

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 135.0...155.0

1000 s: (130.0...160.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

rpm : 450 Speed

Rack travel in mm : 5.70...5.90 Del.quantity cm3/ : 16.0...20.0

1000 s: (13.5...22.5)

cm3 : 6.00Spread 1000 s: (8.00)

Remarks:

: C.D.C. # 3915685

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control

spring retainer.

Start-of-delivery mark 11° cam angle

after start of delivery cyl. 1

Adjust stop lever to 0.5...1.0 mm

before stop.

Note remarks

Test sheet : CUM 8,3 a62 Edition : 01.02.90 Replaces : 7.4.89 Test oil : ISO-4113

Combination no. : 9 400 230 111

Injection pump

Pump designation : PES6A100D320/3RS2691

-4

EP type number : 9 410 230 030

Governor

Governor design. : RSV450...1100ADC2190

-40R

Governer no. : 0 420 233 246

Customer—spec. information Customer : C.D.C.

Engine : 6CT830

1st version kW : 134.2 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 017

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0.6

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Phasing

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 11.20...11.30

Del.quantity cm3/: 10.1...10.3

100 s: (9.9...10.5)

Spread cm3: 0.4

100 s: (0.6)

2nd speed rpm : 450.0

Rack travel in mm : 5.7...5.9 Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

ontrol-lever position. Degree: -3

Speed rpm: 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1100

Del.quantity : 101.0...103.0

1000 : (99.0...105.0)

Spread cm3 : 4.00

1000 : (6.50)

RATED SPEED

1st version Control lever

position degrees: 49...57

Testina:

1st rack travel in: 10.20

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

rpm : 1210...1240 Speed

3rd rack travel in: 4.00

Speed rpm : 1215...1245 4th rack travel in: 1300

rpm : 0.30...1.40Speed

LOW IDLE 1 Control Lever

position degrees: 31...39

Setting point w/out bumper spring

Speed rpm : 450 Rack travel in mm: 5.3

Testina:

: 100 Speed rpm Minimum rack trave: 19.00 : 450 rom

Rack travel in mm : 5.70...5.90

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 11.20...11.30

2nd speed rpm : 750

Rack travel in m: 12.00...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm

Del.quantity cm3/: 110.5...114.5 1000 s: (108.5...116.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.20

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.guantity cm3/: 135.0...155.0

1000 s: (130.0...160.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm

Rack travel in mm : 5.70...5.90

Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5)

cm3 : 6.00Spread

1000 s: (8.00)

Remarks:

: C.D.C. # 3915684

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

Adjust stop lever to 0.5...1.0 mm before stop.

Note remarks

Test sheet : DEE 7,6 z
Edition : 01.02.90
Replaces : 14.1.88

Test oil : ISO-4113

Combination no. : 9 400 230 114

Injection pump

Pump designation : PES6A100D410RS2741

EP type number : 9 410 230 031

Governor

Governor design. : RSV400...1100A2C2204

-2L

Governer no. : 9 420 234 177

Customer-spec. information Customer : JOHN DEERE

Engine : 6466 TT

1st version kW : 124.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 130...150

Test nozzle holder

assembly : 1 688 901 101

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05

: (2.90...3.10)

Rack travel in mm: 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 10.30...10.40

Del.quantity cm3/: 10.5...10.7

100 s: (10.3...10.9)

Spread cm3: 0.3

100 s: (0.6)

2nd speed rpm : 400.0 Rack travel in mm : 4.2...4.4

Del.quantity cm3/ : 1.2...1.6

100 s: (0.9...1.8)

Spread cm3 : 0.7

100 s: (0.9)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1100

Del.quantity : 105.0...107.0 1000 : (103.0...109.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 44...52

Testing:

1st rack travel in: 9.30

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

Speed rpm : 1195...1205

4th rack travel in: 1300

rpm : 0.30...1.40 Speed

LOW IDLE 1

Control lever

position degrees: 19...27

Setting point w/out bumper spring

rpm : 400 Rack travel in mm: 3.8

Testing:

Speed : 100 rpm

Minimum rack trave: 19.00

rpm : 400

Rack travel in mm : 4.20...4.40

Rack travel in mm : 2.00

: 520...580 Speed rpm

TORQUE CONTROL

Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 10.30...10.40

2nd speed rpm : 700

Rack travel in m: 11.50...11.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700 Del.quantity cm3/: 127.5...130.5

1000 s: (125.0...133.0)

Speed

rpm : 750 cm3 : 4.00

Spread 1000 s: (5.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.30

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 130.0...150.0 1000 s: (125.0...155.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400 Rack travel in mm : 4.20...4.40 Del.quantity cm3/: 12.0...16.0

1000 s: (9.5...18.5)

Spread

cm3 : 7.00 1000 s: (9.00)

Remarks:

: JOHN DEERE # RE29255

Adjustment without torque-control spring retainer with 1 mm less

control-rod travel. Increase in full-load delivery with torque-control

spring retainer.

Starting/full-load transition speed

from holding magnet = 450 1/min.

Start-of-delivery mark = 12,5° after

start of delivery cyl. 1.

Note remarks

Test sheet : CUM 8,3 a10 Edition : 01.02.90

Replaces

Test oil : ISO-4113

: 9 400 230 115 Combination no.

Injection pump

Pump designation : PES6A100D320/3RS2691

: 9 410 230 025 EP type number

Governor

: RSV400...1250A0C2190 Governor design.

-24R

: 9 420 234 178 Governer no.

Customer—spec. information Customer : C.D.C.

: 6 CTA 8.3 Engine

: 131.0 1st version kW

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Openina (

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 014 Test lines

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.80...2.90 : (2.75...2.95) Prestroke mm

Rack travel in mm: 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75)Tolerance + - °

: 1 Time to cyl. no.

BASIC SETTING

rpm: 1250 1st speed

Rack travel in mm : 10.90...11.00

Del.quantity cm3/: 9.9...10.1

100 s: (9.7...10.3)

cm3 : 0.4Spread

100 s: (0.6)

rpm : 400.0 2nd speed

Rack travel in mm : 5.3...5.5 Del.quantity cm3/ : 1.2...1.6 100 s: (0.9...1.8)

cm3 : 0.6Spread

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : ?

1st version

rpm : 1250 Speed

: 99.0...101.0 Del.quantity 1000 : (97.0...103.0)

FULL LOAD DELIV. AT FULL LOAD STOP

: 4.00 cm3

Spread 1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 51...59

Testing:

1st rack travel in: 9.90

rpm : 1290...1300 Speed 2nd rack travel in: 4.00 rpm : 1360...1390 Speed 4th rack travel in: 1450 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 26...34 Setting point w/out bumper spring : 400 rpm Rack travel in mm: 4.9 Testing: : 100 Speed rpm Minimum rack trave: 19.00 Speed rpm : 400 Rack travel in mm : 5.30...5.50 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.90 rpm : 1290...1300 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400 Rack travel in mm : 5.30...5.50 Del.quantity cm3/: 12.0...16.0 1000 s: (9.5...18.5) Spread cm3 : 6.001000 s: (8.00)

Remarks:

: C.D.C. # 3915981

Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

Note remarks

: CUM 8,3 a 9 : 06.03.90 Test sheet Edition : 2.5.89 Replaces : ISO-4113 Test oil

Combination no. : 9 400 230 116

Injection pump

Pump designation : PES6A100D320/3RS2691

EP type number : 9 410 230 025

Governor

: RSV400...1050A0C2190 Governor design.

-25R

: 9 420 234 182 Governer no.

Customer-spec. information : C.D.C Customer

: 6 CT 8.3 Engine

: 154.4 : 2100 1st version kW Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Openina

: 207...210 pressure, bar

Orifice plate

: 0,6 diameter mm

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm : 10.50

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 12.40...12.50

Del.guantity cm3/: 12.2...12.4

100 s: (12.0...12.6)

cm3 : 0.4Spread

100 s: (0.6)

rpm : 400.02nd speed Rack travel in mm: 5.8...6.0

Del.quantity cm3/: 1.6...2.0

100 s: (1.3...2.2)

cm3 : 0.6 Spread

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

: 122.5...124.5 Del.quantity

1000 : (120.5...126.5)

: 4.00 cm3 Spread

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 38...46

Testing:

1st rack travel in: 11.40 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 rpm : 1130...1160 Speed 3rd rack travel in: 4.00 rpm : 1135...1165 Speed 4th rack travel in: 1275 rpm : 0.30...1.40 Speed LOW IDLE 1 Control Lever position degrees: 19...27 Setting point w/out bumper spring : 400 rpm Rack travel in mm: 5.4 Testina: : 100 Speed rom Minimum rack trave: 19.00 : 400 Speed rpm Rack travel in mm : 5.30...5.50 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.40 rpm : 1090...1100 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0) Rack travel in mm : 19.00...21.00 LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.80...6.00
Del.quantity cm3/ : 16.0...20.0
100C s: (13.5...22.5)

Spread cm3 : 6.00 1000 s: (8.00)

Remarks:

: C.D.C. # 3915962

Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark at 10° cam rotation angle after start of delivery, cylinder 1

Note remarks

Test sheet : CUM 8,3 b 4 Edition : 28.09.89 : 7.4.89 Replaces Test oil : ISO-4113

Combination no. : 9 400 230 119

Injection pump

Pump designation : PES6A100D320/3RS2691

: 9 410 230 028 EP type number

Governor

Governor design. : RQV350...1250AB1235R

: 9 420 231 020 Governer no.

Customer—spec. information Customer : C.D.C.

Engine : 6 CT-830

: 157.0 1st version kW : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 014 Test lines

Outside diameter x Wall thickness

: 6.00x2,00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY Test pressure, bar: 27...29

: 2.80...2.90 : (2.75...2.95) Prestroke mm

Rack travel in mm : 10.50 : 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1250

Rack travel in mm : 11.90...12.00

Del.quantity cm3/: 12.5...12.7

100 s: (12.3...12.9)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 5.0...5.2 Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.6100 s: (0.8)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm: 1400 : 8.40...8.50 travel mm

rpm : 1500 2nd speed

: 9.10...9.30 travel mm

3rd speed rpm : 350 : 0.70...1.10

travel mm

4th speed rpm : 450

travel mm : 1.60...2.00

: 250 5th speed rpm

: 0.10...0.50 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1550 Speed

Rack travel in mm : 6.70...9.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1250Speed

Aneroid pressure h: 700 : 125.0...127.0 Del.quantity 1000 : (123.0...129.0) : 4.00 Spread cm3 1000 : (6.50) RATED SPEED 1st version Control lever position degrees: 41...49 Testing: 1st rack travel in: 10.90 rpm : 1290...1300 Speed 2nd rack travel in: 4.00 rpm : 1415...1445 Speed 4th rack travel in: 1500 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 9...15 Testing: Speed rpm Minimum rack trave: 7.80 rpm : 350 Rack travel in mm : 5.00...5.20 CONSTANT REGULATION rpm : 350...500 Speed TORQUE CONTROL Dimension a mm : 0.50 Torque control curve - 1st version : 1250 1st speed rom Rack travel in m: 11.90...12.00 : 750 2nd speed rpm Rack travel in m: 12.30...12.50 d speed rpm : 1200 Rack travel in m: 11.90...12.00 3rd speed rpm : 800 4th speed Rack travel in m: 12.30...12.50 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 700 Pressure

: 12.30...12.50 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 8.70...8.90

2nd pressure hPa : 200 Rack travel in m: 9.80...9.90

3rd pressure hPa : 390

Rack travel in m: 11.20...11.60 START CUT-OUT 1/min: 270 (280) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 Speed rpm : 750 Del.quantity cm3/ : 128.0...132.0 1000 s: (126.0...134.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 61.5...65.5 1000 s: (59.5...67.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.90 rpm : 1290...1300 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 170.0...190.0 1000 s: (165.0...195.0)

Rack travel in mm : 14.60...14.80

LOW IDLE

Speed rpm: 350
Rack travel in mm: 5.00...5.20
Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) cm3 : 6.00Spread

1000 s: (8.00)

Remarks:

: C.D.C. # 3912636

Start-of delivery mark/lock = 7.5° angular displacement of the cam after start of delivery of cylinder 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 2.75...2.85 : (2.70...2.90) Rack travel in mm : 10.50 Note remarks : 1-5-3-6-2-4 Firing order Test sheet : IHC 5,9 b : 28.09.89 Edition : 20.12.88 Replaces : 0-60-120-180-240-300 Test oil : ISO-4113 Phasing : 9 400 230 120 Tolerance + - ° : 0.50 (0.75) Combination no. Injection pump Time to cyl. no. : 1 Pump designation : PES6A95D32ORS2750 : 0 410 896 906 BASIC SETTING EP type number Governor rpm : 1350Governor design. : RQV350...1350AB1236R 1st speed : 9 420 231 021 Governer no. Rack travel in mm : 11.10...11.20 Customer-spec, information Del.guantity cm3/: 7.3...7.5 : NAVISTAR Customer 100 s: (7.1...7.7) : MARS DTA360 Engine : 134.0 Spread cm3 : 0.31st version kW : 2700 Rated speed 100 s: (0.6) TEST BENCH REQUIREMENTS 2nd speed rpm : 350.0 Rack travel in mm: 5.2...5.4 Test oil Del.quantity cm3/: 1.5...1.9 inlet temp. °C : 38...42 100 s: (1.2...2.1) cm3 : 0.3Overflow valve Spread 100 s: (0.5) : 2 417 413 038 (B) Setting of injection pump Inlet press., bar: 2.80 with governor Test nozzle holder : 1 688 901 110 GUIDE SLEEVE TRAVEL assembly rpm : 1350 1st speed : 7.30...7.50 travel mm Opening : 250...253 2nd speed rpm : 1460 pressure, bar : 8.10...8.50 travel mm rpm : 550 3rd speed Orifice plate : 3.10...3.70 : 0,5 travel mm diameter mm : 350 4th speed rpm : 1.30...1.70 travel mm Test lines : 1 680 750 008 GUIDE SLEEVE POSITION Control-lever position Outside diameter x Wall thickness Degree: -1 : 6.00x2.00x600 rpm : 1535 x Length mm Speed Rack travel in mm : 6.70...9.30 (A) Injection pump setting values Insp. values in parentheses FULL LOAD DELIV. AT FULL LOAD STOP Set equal delivery quant. 1st version per values rpm : 1350 Speed BEGINNING OF DELIVERY Aneroid pressure h: 900 : 73.0...75.0 Test pressure, bar: 27...29 Del.quantity

1000

: (71.0...77.0)

cm3 : 3.50Spread 1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 45...53

Testing:

1st rack travel in: 10.10 rpm : 1415...1445 Speed

2nd rack travel in: 4.00

Speed rpm : 1530...1540 4th rack travel in: 1600

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 8...16

Testing:

Speed : 250 rpm Minimum rack trave: 7.80 rpm : 350

Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

rpm : 350...500 Speed

Aneroid/Altitude Compensator Test

1st version

Setting Speed

: 500 rpm hPa : 900

Pressure Rack travel mm : 11.10...11.20

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 8.80...9.00

2nd pressure hPa : 250

Rack travel in m: 10.00...10.10

3rd pressure hPa : 190

Rack travel in m: 9.30...9.70

START CUT-OUT

1/min: 290 (300) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 57.0...61.0 1000 s: (55.0...63.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.10

Speed rom : 1415...1445

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 125.0...145.0

1000 s: (120.0...150.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350 Rack travel in mm : 5.20...5.40

Del.quantity cm3/: 15.0...19.0 1000 s: (12.5...21.5) Spread cm3: 3.50 1000 s: (5.50)

Remarks:

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of delivery of cylinder 1

Note remarks

: IHC 5,9 b 1 : 28.09.89 Test sheet Edition : 7.4.89 Replaces Test oil : ISO-4113

: 9 400 230 121 Combination no.

Injection pump

Pump designation : PES6A95D32ORS2750 EP type number : 0 410 896 906

Governor

Governor design. : RQV350...1350AB1236-

1R

: 9 420 231 022 Governer no.

Customer-spec. information Customer : NAVISTAR

Engine : MARS DT 360

1st version kW : 126.0 Rated speed : 2700

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 038

Inlet press., bar: 2.80

Test nozzle holder

: 1 688 901 110 assembly

Openina

: 250...253 pressure, bar

Orifice plate

diameter mm : 0,5

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.75...2.85

: (2.70...2.90)

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasina

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1350

Rack travel in mm : 11.10...11.20

Del.guantity cm3/: 7.3...7.5

100 s: (7.1...7.7)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 350.02nd speed Rack travel in mm: 5.2...5.4

Del.quantity cm3/: 1.5...1.9

100 s: (1.2...2.1) cm3 : 0.3Spread

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1350 1st speed

: 7.30...7.50 travel mm

rpm : 1460 2nd speed

: 8.10...8.50 travel mm

: 550 3rd speed man

: 3.10...3.70 : 350 travel mm

4th speed rpm

: 1.30...1.70 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1535 Speed

Rack travel in mm : 6.70...9.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1350 Speed Aneroid pressure h: 900

Del.quantity : 73.0...75.0

1000 : (71.0...77.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control Lever

position degrees: 45...53

Testing:

1st rack travel in: 10.10

rpm : 1415...1445 Speed

2nd rack travel in: 4.00

Speed rpm : 1530...1540

4th rack travel in: 1600

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 8...16

Testina:

Speed : 250 rom Minimum rack trave: 7.80

: 350 rpm

Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

rpm : 350...500 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm hPa : 900 Pressure

: 11.10...11.20 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 8.70...8.90

2nd pressure hPa : 320

Rack travel in m: 9.90...10.00 3rd pressure hPa : 230

Rack travel in m: 9.20...9.60

START CUT-OUT

1/min: 290 (300) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 500 Speed Del.quantity cm3/: 55.5...59.5

Aneroid pressure h: -

1000 s: (53.5...61.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10

rpm : 1415...1445 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 125.0...145.0 1000 s: (120.0...150.0) Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm: 350
Rack travel in mm: 5.20...5.40
Del.quantity cm3/: 15.0...19.0

1000 s: (12.5...21.5)

cm3 : 3.50Spread

1000 s: (5.50)

Remarks:

: NAVISTAR #1811834C92

Limit shutoff stop screw to 1.0 mm.

F24

Note remarks

: IHC 5,9 c : 01.02.90 Test sheet Edition Replaces : 15.6.88 : ISO-4113 Test oil

Combination no. : 9 400 230 122

Injection pump

: PES6A95D32ORS2745 Pump designation : 9 410 230 033 EP type number

Governor

: RQV350...1350AB1236-Governor design.

2R

: 9 420 231 023 Governer no.

Customer-spec. information Customer : NAVISTAR

: MARS DTA360 Engine

: 130.0 1st version kW : 2700 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 038

Inlet press., bar: 2.80

Test nozzle holder

: 1 688 901 110 assembly

Openina

: 250...253 pressure, bar

Orifice plate

: 0,5 diameter mm

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.75...2.85 : (2.70...2.90) Prestroke mm

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasina

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1350

Rack travel in mm : 11.50...11.60

Del.quantity cm3/: 7.8...8.0

100 s: (7.6...8.2)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 5.1...5.3 Del.quantity cm3/ : 1.3...1.7 100 s: (1.0...1.9)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 13501st speed

: 7.30...7.50 travel mm rpm : 1460

2nd speed

: 8.10...8.50 rpm : 550 travel mm

3rd speed

: 3.10...3.70 travel mm

: 350 4th speed rpm

: 1.30...1.70 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1350 Speed Aneroid pressure h: 900

: 78.0...80.0 Del.quantity

1000 : (76.0...82.0) cm3 : 3.50

Spread : (6.00) 1000

RATED SPEED

1st version Control lever

position degrees: 44...52

Testing:

1st rack travel in: 10.50 rpm : 1425...1455 Speed

2nd rack travel in: 4.00

rpm : 1540...1550 Speed

4th rack travel in: 1600

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 8...16

Testing:

Speed rom Minimum rack trave: 7.80 rpm : 350

Rack travel in mm : 5.10...5.30

CONSTANT REGULATION

rpm : 350...500 Speed

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm hPa : 900 Pressure

: 11.50...11.60 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 8.40...8.60

2nd pressure hPa : 190

Rack travel in m: 9.10...9.20

3rd pressure hPa : 375

Rack travel in m: 10.60...11.00

START CUT-OUT

1/min: 290 (300) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: -1000 s: (50.0...58.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.50

rpm : 1425...1455 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 150.0...170.0 1000 s: (145.0...175.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

rpm : 350 Speed

Rack travel in mm : 5.10...5.30 Del.quantity cm3/: 13.0...17.0 1000 s: (10.5...19.5) Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

: NAVISTAR #1811836C92

Limit shutoff stop screw to 1.0 mm.

Note remarks

Test sheet : DEE 10,1 a9
Edition : 01.02.90
Replaces : 26.6.89
Test oil : ISO-4113

Combination no. : 9 400 231 039

Injection pump

Pump designation : PES6P110A72ORS370 EP type number : 0 412 016 052

Governor

Governor design. : RSV450...1050P0A465

Governer no. : 9 420 234 180

Customer—spec. information Customer : JOHN DEERE

Engine : 6619A

1st version kW : 201.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X3.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.75...2.85

: (2.70...2.90)

Rack travel in mm: 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 12.40...12.50

Del.quantity cm3/: 17.4...17.6

100 s: (17.1...17.9)

Spread cm3: 0.4

100 s: (0.7)

2nd speed rpm: 450.0 Rack travel in mm: 6.0...6.2 Del quantity cm3/: 1.9...2.5

Del.quantity cm3/: 1.9...2.5 100 s: (1.7...2.7)

Spread cm3: 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed rpm : 1050 Aneroid pressure h: 900

Del.quantity : 174.0...176.0 1000 : (171.0...179.0)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 47...55

Testing:

1st rack travel in: 11.40

Speed rpm : 1090...1100

2nd rack travel in: 4.00

Speed rpm : 1220...1250

4th rack travel in: 1300

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 25...33

Setting point w/out bumper spring

: 450 Speed rpm Rack travel in mm: 5.6

Testing:

: 100 Speed rpm Minimum rack trave: 19.00 rpm : 450

Rack travel in mm : 6.00...6.20 Rack travel in mm : 2.00

: 600...660 Speed rpm

TORQUE CONTROL

Torque control curve - 1st version

_rpm : 1050 1st speed

Rack travel in m: 12.40...12.50

rpm : 650 2nd speed

Rack travel in m: 13.60...13.80

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm hPa : 900 Pressure

: 13.60...13.80 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.50...10.70 2nd pressure hPa : 280

Rack travel in m: 11.70...11.80

3rd pressure hPa : 480

Rack travel in m: 12.80...13.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 : 650 Speed rpm

Del.quantity cm3/: 198.5...201.5 1000 s: (195.0...205.0)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: -

1000 s: (123.0...133.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.40

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 170.0...210.0 1000 s: (165.0...215.0)

Rack travel in mm : 20.00...21.00

HIGH IDLE

1st version

Speed rpm : 1170

Rack travel in mm : 7.40...7.60

LOW IDLE

: 450 Speed rpm

Rack travel in mm : 6.00...6.20 Del.quantity cm3/: 19.0...25.0 1000 s: (17.0...27.0)

cm3 : 4.50 1000 s: (7.50) Spread

Remarks:

: JOHN DEERE # RE29146

Start-of-delivery mark at control-rod travel 10.5 mm and 15° after start of

delivery.

Starting/full-load transition speed from holding magnet = 400 1/min.

Note remarks

: MAC 10,9 c4 Test sheet

Edition : 20.3.90

Replaces Test oil : ISO-4113

: 9 400 231 093 Combination no.

Injection pump

Pump designation : PES6P120A720/3RS6008

Governor

: RQV300/500...975PA Governor design.

591K

Cust. part no.

Customer-spec. information : MACK Customer

: EE6-350 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 40...42

Inlet press., bar: 1.5

Test nozzle holder assembly

Opening

: 300...308 pressure, bar

Test lines : 9 681 230 727

Outside diameter x Wall thickness

: 6.35x1.70x990.60 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

: 3.20...3.30 Prestroke mm : (3.15...3.35

Rack travel in mm: 11.5

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 975 1st speed

Rack travel in mm : 14.50...14.60

Del.quantity cm3/: 20.9...21.1

100 s: (-)

Spread cm3 : 0.4

100 s: (0.75)

rpm : 300 2nd speed

Rack travel in mm : 5.40...5.50 Del.quantity cm3/ : 1.5...2.5

100 s: (-)

cm3 : 0.6Spread 100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1045 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 975 Speed

: 209.0...211.0 Del.quantity

1000 : (-)

RATED SPEED

1st version

Control lever

position degrees: 54.5...59.5

Testing:

1st rack travel in: 13.50

rpm : 1015...1025 Speed

2nd rack travel in: 4.00

Speed rpm : 1140...1170 4th rack travel in: 1190

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 17.5...22.5

Testing:

rpm : 250 Speed Minimum rack trave: 9.80 rpm : 400 Speed

Rack travel in mm : 3.80...5.20 Rack travel in mm : 2.00

: 690...750 rpm Speed

TORQUE CONTROL Dimension a mm : 1.50 Torque control curve - 1st version rpm : 975 1st speed Rack travel in m: 14.50...14.60 2nd speed rpm : 900 Rack travel in m: 14.45...14.55 : 800 3rd speed rpm Rack travel in m: 14.55...14.65 4th speed rpm : 650 Rack travel in m: 14.15...14.25 5th speed rpm : 500 Rack travel in m: 13.15...13.25 FUEL DELIVERY CHARACTERISTICS 1st version Speed : 700 rpm Del.quantity cm3/: 234.5...239.5 1000 s: (-) : 650 Speed rpm Del.quantity cm3/: 231.0...237.0 1000 s: (-) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.50 rpm : 1015...1025 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm Del.quantity cm3/: 120.0...180.0 1000 s: (-) Rack travel in mm : 12.00...12.10

LOW IDLE

Speed rpm : 300 Del.quantity cm3/ : 15.0...25.0 1000 s: (-)

Remarks:

: MACK # 313 GC 5144 P

See VDT-I-MAC 002

PLE dimension = 0.740'' - 0.820''

The test specifications apply to testing of the injection-pump assembly with the genuine engine/nozzle-and-holder

Note remarks

: MAC 11,0 x9 Test sheet : 5.4.90 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 9 400 231 135

Injection pump

Pump designation : PES6P110A720RS6006

Governor

: RQV300/600...1050PA Governor design.

621K

Cust. part no.

Customer—spec. information Customer : MACK

: FM6-250 Enaine

TEST BENCH REQUIREMENTS

Test oil

Outlet temp, °C : 40...45

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.5

Test nozzle holder

assembly

Opening

: 300...308 pressure, bar

Test lines : 9 681 230 727

Outside diameter

x Wall thickness

: 6.35X1.70X991 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

: 3.2...3.3 Prestroke mm

: (3.15...3.35)

Rack travel in mm : 10.50

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.5 (0.75)

BASIC SETTING

rpm : 10001st speed

Rack travel in mm: 11.50

Del.quantity cm3/: 14.5...14.7

100 s: (-)

Spread cm3 : 0.4

100 s: (-)

rpm : 300 2nd speed Rach travel in mm: 4.70 Del.quantity cm3/: 1.8...2.8

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1125

Rack travel in mm : 15.20...17.80

FULL LOAD DELTY. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

Del.quantity : 145.0...147.0 1000 : (-)

RATED SPEED

1st version Control lever

position degrees: 58...63

Testina:

1st rack travel in: 10.50

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

rpm : 1170...1200 Speed

4th rack travel in: 1230

rom : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 17.5...22.5

Testina:

rpm : 250 Speed Minimum rack trave: 9.50 rpm : 400

Rack travel in mm : 3.80...5.20 Rack travel in mm : 2.00

rpm : 700...760 Speed TORQUE CONTROL Dimension a mm : 1.15 Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 11.50 rpm : 1050 2nd speed Rack travel in m: 11.45...11.55 : 850 3rd speed rpm Rack travel in m: 11.80...11.90 rpm : 630 4th speed Rack travel in m: 12.60...12.70 5th speed rpm : 500 Rack travel in m: 12.20...12.30 FUEL DELIVERY CHARACTERISTICS 1st version : 850 Speed rpm Del.quantity cm3/: 157.0...159.0 1000 s: (-) rpm : 630 Speed Del.quantity cm3/: 190.0...194.0 1000 s: (-) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.50 rpm : 1090...1100 Speed STARTING FUEL DELIVERY rpm : 100 Del.quantity cm3/: 120.0...180.0 1000 s: (-) LOW IDLE : 300 Speed rpm Del.quantity cm3/: 18.0...28.0 1000 s: (-) Remarks: See VDT-I-MAC 002 PLE dimension = 0.740'' - 0.820''

The test specifications apply to testing of the injection—pump assembly with the genuine engine/nozzle—and—holder

assembly

Note remarks

: MAC 11,1 i7 Test sheet : 22.3.90

Edition

Replaces

Test oil : ISO-4113

Combination no. : 9 400 231 179

Injection pump

Pump designation : PES6P120A720RS7011

Governor

Governor design. : RQV300...850PA701K

Cust. part no.

Customer-spec. information : MACK Customer

Engine : EM 6-300 L-4VH

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 0.3

Openina

: 300...308 pressure, bar

Test lines : 9 681 230 735

Outside diameter x Wall thickness

: 6.35x1.70x838.2 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Prestroke mm

: 3.2...3.3 : (3.15...3.35)

Rack travel in mm : 8.00...9.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - * : 0.50 (0.75)

BASIC SETTING

rom: 850 1st speed

Rack travel in mm : 10.60...10.70

Del.quantity cm3/: 19.1...19.3

100 s: (-)

Spread cm3 : 0.6

100 s: (0.9)

rpm : 300 2nd speed Rack travel in mm: 4.70

Del.quantity cm3/: 1.7...2.3

100 s: (-)

cm3 : 0.75Spread

100 s: (1.05)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 965

Speed Rack travel in mm : 9.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed

: 191.0...193.0 Del.quantity

1000 : (189.0...195.0)

RATED SPEED

1st version

Control lever

position degrees: 57...61

Testing:

1st rack travel in: 9.60

rpm : 895...905 Speed 2nd rack travel in: 4.00

rpm : 970...1000 Speed

4th rack travel in: 1050

rpm : 0.00...1.00Speed

LOW IDLE 1 Control Lever

position degrees: 15...19

Testing:

Speed : 250 rpm Minimum rack trave: 6.50

Speed rpm : 400

Rack travel in mm : 2.00...3.40 Rack travel in mm : 2.00

: 400...460 Speed rpm

TORQUE CONTROL Torque control curve - 1st version rpm : 850 1st speed Rack travel in m: 10.60...10.70 : 800 2nd speed rpm Rack travel in m: 10.95...11.05 rpm : 700 3rd speed Rack travel in m: 12.00...12.10 th speed rpm : 510 Rack travel in m: 15.80...15.90 4th speed rpm : 450 5th speed Rack travel in m: 15.70...15.80 FUEL DELIVERY CHARACTERISTICS

1st version : 700 Speed rpm

Del.quantity cm3/: 220.0...225.0 1000 s: (218.0...227.0)

Speed rpm : 510 Del.quantity cm3/: 284.0...290.0 1000 s: (282.0...292.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.60 rpm : 895...905 Speed

STARTING FUEL DELIVERY

: 200 Speed rpm Del.quantity cm3/: 140.0...200.0 1000 s: (-)

LOW IDLE

Speed rpm : 300 Rack travel in mm : 17.0...23.0 Del.quantity cm3/ : (17.0...23.0) 1000 s: (15.0...25.0)

Remarks:

See VDT-I-MAC 002

PLE dimension = 0.740'' - 0.820''

The test specifications apply to testing of the injection-pump assembly with the genuine engine/nozzle-and-holder assembly

Note remarks

Test sheet : MAC 11,1 15 : 22.3.90 Edition

Replaces

: ISO-4113 Test oil

: 9 400 231 179 Combination no.

Injection pump

Pump designation : PES6P120A720RS7011

Governor

: RQV325...875PA701K Governor design.

Cust. part no.

Customer-spec. information Customer : MACK

Engine : EM 6-300 L-4VH

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 0.3

Openina (

: 300...308 pressure, bar

Test lines : 9 681 230 735

Outside diameter x Wall thickness

: 6.35X1.70X838.20 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

: 3.2...3.3 Prestroke mm : (3.15...3.35) Rack travel in mm : 8.00...9.00 : 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 875

Rack travel in mm : 10.40...10.50

Del.quantity cm3/: 18.8...19.0

100 s: (-)

Spread cm3 : 0.6

100 s: (0.9)

rpm : 325 2nd speed

Rack travel in mm : 5.10...5.30 Del.quantity cm3/: 3.3...3.7

100 s: (-)

cm3 : 0.75 Spread

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 965 Speed

Rack travel in mm : 9.00...9.10

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 875 Speed

: 188.0...190.0 Del.quantity

1000 : (185.0...193.0)

RATED SPEED

1st version

Control lever

position degrees: 57...61

Testina:

1st rack travel in: 9.40

rpm : 915...925 Speed

2nd rack travel in: 4.00 rpm : 985...1015 Speed

4th rack travel in: 1050

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 15...19

Testing:

: 275 Speed rpm Minimum rack trave: 6.90 rpm : 400 Speed

Rack travel in mm : 2.70...4.10

Rack travel in mm : 2.00 : 435...510 Speed rpm

TORQUE CONTROL Torque control curve - 1st version rpm : 875 1st speed Rack travel in m: 10.40...10.50 : 700 2nd speed rpm Rack travel in m: 11.90...12.10 : 600 3rd speed rpm Rack travel in m: 14.40...14.50 4th speed rom : 510 Rack travel in m: 15.70...15.80 5th speed rpm : 450 Rack travel in m: 15.10...15.20 FUEL DELIVERY CHARACTERISTICS 1st version : 700 Speed rpm Del.quantity cm3/: -1000 s: (281.0...293.0) : 510 Speed man Del.quantity cm3/: 283.0...291.0 1000 s: (281.0...293.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.40 rpm : 915...925 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 160.0...220.0 1000 s: (150.0...230.0) LOW IDLE : 325 Speed rpm Rack travel in mm : 33.0...37.0 Del.quantity cm3/: (31.0...39.0) Remarks: See VDT-I-MAC 002 PLE dimension = 0.740'' - 0.820''The test specifications apply to testing of the injection-pump assembly with the genuine engine/nozzle-and-holder assembly

Note remarks

Test sheet : MAC 11,1 L Edition : 26.3.90

Replaces

Test oil : ISO-4113

: 9 400 231 183 Combination no.

Injection pump

Pump designation : PES6F110A720RS6015

Governor

: RQV300/600...1050PA Governor design.

587-3K

Cust. part no.

Customer-spec. information Customer : MACK

: EM6 - 237 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.5

Openina

pressure, bar : 300...308

Test lines : 9 681 230 727

Outside diameter x Wall thickness

: 6.35x1.70x990.60 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

: 3.2...3.3 Prestroke mm

: (3.15...3.35)

Rack travel in mm : 11.50

: 1-5-3-6-2-4 Firing order

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75) BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm: 11.50

Del.quantity cm3/: 13.4...13.6

100 s: (-)

cm3 : 0.4Spread

100 s: (0.6)

rpm : 300 2nd speed

Rack travel in mm : 5.0 Del.quantity cm3/ : 2.25...2.75

100 s: (-) cm3 : 0.45

Spread 100 s: (0.75)

GUIDE SLEEVE POSITION Control-lever position Degree: -1

rpm : 1125 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

: 134.0...136.0 Del.quantity

1000 : (132.0...138.0)

RATED SPEED

1st version

Control lever

position degrees: 57.5...65.5

Testing:

1st rack travel in: 10.50

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

rpm : 1175...1205 Speed

4th rack travel in: 1250

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 16.5...21.5

Testing:

rpm : 250 Speed Minimum rack trave: 9.00 rpm : 400 Speed

Rack travel in mm : 5.90...7.30

Rack travel in mm : 2.00

rpm : 690...750 Speed

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1050 1st speed

Rack travel in m: 11.49...11.51

rpm : 900 2nd speed

Rack travel in m: 11.40...11.50

: 800 3rd speed rom

Rack travel in m: 11.35...11.45

: 700 4th speed rpm

Rack travel in m: 11.55...11.65

5th speed rpm : 500

Rack travel in m: 11.60...11.70

FUEL DELIVERY CHARACTERISTICS

1st version

: 800 Speed rom

Del.quantity cm3/: 145.0...150.0 1000 s: (143.0...152.0)

rpm : 600 Speed

Del.quantity cm3/: 176.0...180.0

1000 s: (174.0...182.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.50

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 135.0...175.0

1000 s: (-)

Rack travel in mm : 10.70...10.90

LOW IDLE

Speed rpm : 300 Rack travel in mm : 22.50...27.50 Del.guantity cm3/: (20.50...29.50)

Remarks:

The test specifications apply to testing of the injection-pump assembly with the genuine engine/nozzle-and-holder assembly

Note remarks

: MAC 11,1 L1 Test sheet Edition : 27.3.90

Replaces

Test oil : TSO-4113

: 9 400 231 185 Combination no.

Injection pump

Pump designation : PES6P110A720RS6015

Governor

: RQV300/600...1050PA Governor design.

621-9K

Cust. part no.

Customer-spec. information Customer : MACK

: EM6-250 Engine

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.5

Openina

: 300...308 pressure, bar

: 9 681 230 272 Test lines

Outside diameter x Wall thickness

: 6.35x1.70x990.6 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

: 3.2...3.3 Prestroke mm : (3.15...3.35)

Rack travel in mm: 11.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasina

Tolerance + - ° : 0.50 (0.75) BASIC SETTING

1st speed rpm: 1050

Rack travel in mm: 11.00

Del.quantity cm3/: 13.9...14.1

100 s: (-)

cm3 : 0.4Spread

100 s: (0.6)

rpm : 3002nd speed Rack travel in mm : 4.00

Del.guantity cm3/: 2.25...2.75

100 s: (-)

cm3 : 0.45Spread 100 s: (0.75)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1125

Speed Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

Del.quantity

: 139.0...141.0 1000 : (137.0...143.0)

RATED SPEED

1st version Control lever

position degrees: 56.5...61.5

Testing:

1st rack travel in: 10.00

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

rpm : 1160...1190 Speed

4th rack travel in: 1230

rom : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 17.5...22.5

Testing:

Speed : 250 rpm Minimum rack trave: 9.00 : 400 rpm Speed

Rack travel in mm : 6.10...7.50

Rack travel in mm : 2.00

: 710...770 Speed rpm

TORQUE CONTROL Torque control curve - 1st version rpm : 1050 1st speed Rack travel in m: 11.00 : 1000 2nd speed rpm Rack travel in m: 10.95...11.05 rpm : 850 3rd speed Rack travel in m: 11.15...11.25 4th speed rpm : 630 Rack travel in m: 11.45...11.55 5th speed rpm : 500 Rack travel in m: 10.80...1090 FUEL DELIVERY CHARACTERISTICS 1st version : 850 Speed rom Del.quantity cm3/: 150.5...155.5 1000 s: (148.5...157.5) : 630 Speed rpm Del.quantity cm3/: 180.0...184.0 1000 s: (178.0...186.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.00 rpm : 1090...1100 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 130.0...170.0 1000 s: (120.0...180.0) Rack travel in mm : 9.20...9.40 HIGH IDLE 1st version Speed : 1180 rom Rack travel in mm: 3.90 LOW IDLE rpm : 300 Speed Del.quantity cm3/: 22.5...27.5 1000 s: (20.5...29.5) Remarks:

The test specifications apply to testing of the injection-pump assembly with the genuine engine/nozzle-and-holder assembly

See VDT-I-MAC 002

PLE dimension = 0.740'' - 0.820''

Note remarks

: MAC 11,0 w3 Test sheet

Edition : 2.4.90

Replaces

Test oil : ISO-4113

: D 400 231 187 Combination no.

Injection pump

Pump designation : PES6P110A720RS6005-1

Governor

: RQV300/600...1050PA Governor design.

586-3K

: * Cust. part no.

Customer-spec. information

: MACK Customer

Engine : EM6-285

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 0.3

Test nozzle holder

assembly

Opening

: 300...308 pressure, bar

Test lines : 9 681 230 727

Outside diameter x Wall thickness

x Length mm : 6.35x1.70x990.6

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Prestroke mm

: 2.8...2.9 : (2.75...2.95)

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.5 (0.75)

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 13.20...13.30

Del.quantity cm3/: 16.0...16.2

100 s: (15.8...16.4)

cm3 : 0.5Spread

100 s: (0.75)

rpm : 300 2nd speed

Rack travel in mm : 4.40...4.60 Del.quantity cm3/: 2.4...2.9

100 s: (2.2...2.9)

cm3 : 0.7Spread 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1120

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

: 160.5...162.5 Del.quantity

1000 : (158.5...164.5)

RATED SPEED

1st version

Control lever

position degrees: 56.5...61.5

Testing:

1st rack travel in: 12.20

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

Speed rpm : 1185...1215 4th rack travel in: 1240

rpm : 0.00...1.00Speed

LOW IDLE 1

Control lever

position degrees: 14.5...19.5

Testina:

: 250 Speed rpm Minimum rack trave: 8.90 : 400 Speed rpm

Rack travel in mm : 5.40...6.80 Rack travel in mm : 2.00 rpm : 670...730 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 13.20...13.30 : 1000 rpm 2nd speed Rack travel in m: 13.15...13.25 rpm : 700 3rd speed Rack travel in m: 13.75...13.85 rpm : 600 4th speed Rack travel in m: 14.15...14.25 rpm : 500 5th speed Rack travel in m: 13.65...13.75 FUEL DELIVERY CHARACTERISTICS 1st version : 800 Speed mar Del.quantity cm3/: 184.0...189.0 1000 s: (182.0...191.0) Speed rpm : 600 Del.quantity cm3/: 222.5...226.5 1000 s: (220.0...228.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.20 rpm : 1090...1100 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 160.0...200.0 1000 s: (150.0...210.0) Rack travel in mm : 10.60...10.70 LOW IDLE Speed rpm : 300 Rack travel in mm : 24.5...29.5 Del.quantity cm3/: (22.5...31.5) Remarks: : MACK #313 GC 5148 P : 31 See VDT-I-MAC 002 PLE dimension = 0.740'' - 0.820''

The test specifications apply to test-

ing of the injection-pump assembly with the genuine engine/nozzle-and-holder assembly

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Note remarks

: MAC 11,1 i2 : 23.3.90 Test sheet Edition

Replaces

: ISO-4113 Test oil

Combination no. : 9 400 231 193

Injection pump

Pump designation : PES6P120A720RS7011

Governor

Governor design. : RQV300...850PA721K

Cust. part no. : *

Customer-spec. information Customer : MACK

: EM 6-300 L 4VH Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 0.3

Openina .

: 295...305 pressure, bar

: 9 681 230 735 Test lines

Outside diameter x Wall thickness

: 6.35x1.70x838.2 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Prestroke mm : 3.20...3.30 : (3.15...3.35) Rack travel in mm : 8.00...9.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

BASIC SETTING

rpm: 850 1st speed

Rack travel in mm : 10.60...10.70

Del.quantity cm3/: 191.0...193.0

100 s: (-)

cm3 : 0.6Spread

100 s: (0.9)

rpm : 300 2nd speed

Rack travel in mm : 4.60...4.80

Del.quantity cm3/: 17.0...23.0

100 s: (-)

cm3 : 0.75Spread

100 s: (1.0)

GUIDE SLEEVE POSITION Control-Lever position

Degree: -1

rpm : 1125 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed

: 191.0...193.0 Del.quantity

1000 : (189.0...195.0)

RATED SPEED

1st version

Control lever

position degrees: 57...61

Testing:

1st rack travel in: 9.60 rpm : 895...905 Speed

2nd rack travel in: 4.00

rpm : 970...1000 Speed

4th rack travel in: 1050

rpm : 0.00...1.00Speed

LOW IDLE 1

Control lever

position degrees: 15...19

Testing:

: 250 Speed rom Minimum rack trave: 6.50

rpm : 400 Speed

Rack travel in mm : 2.00...3.40

Rack travel in mm : 2.00

: 400...460 Speed rom

TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 850 Rack travel in m: 10.60...10.70 : 700 2nd speed rpm Rack travel in m: 12.00...12.10 : 510 3rd speed rpm Rack travel in m: 15.80...15.90 4th speed rpm : 450 Rack travel in m: 15.70...15.80 FUEL DELIVERY CHARACTERISTICS 1st version : 700 Speed rpm Del.quantity cm3/: -1000 s: (218.0...227.0) : 510 Speed rpm Del.quantity cm3/: 284.0...290.0 1000 s: (282.0...292.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.60 rpm : 895...905 Speed STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 140.0...200.0 1000 s: (130.0...210.0)

LOW IDLE

Speed rpm : 300 Del.quantity cm3/ : 17.0...23.0 1000 s: (15.0...25.0)

Remarks:

See VDT-I-MAC 002

PLE dimension = 0.740'' - 0.820''

The test specifications apply to testing of the injection—pump assembly with the genuine engine/nozzle-and-holder assembly

Note remarks

Test sheet Edition : MAC 11,1 i3 : 23.3.90

Replaces

: ISO-4113 Test oil

: 9 400 231 193 Combination no.

Injection pump

Pump designation : PES6P120A720RS7011

Governor

: RQV325...875PA721K Governor design.

Cust. part no.

Customer-spec. information Customer : MACK

Engine : EM 6-300 L 4VH

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 0.3

Test nozzle holder

assembly

Openina 0

: 295...305 pressure, bar

: 9 681 230 735 Test lines

Outside diameter

x Wall thickness

x Length mm : 6.35x1.70x838.2

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

: 3.20...3.30 Prestroke mm : (3.15...3.35)

Rack travel in mm : 8.00...9.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 875 1st speed

Rack travel in mm : 10.40...10.50

Del.guantity cm3/: 18.8...19.0

100 s: (18.5...19.3)

cm3 : 0.6Spread

100 s: (0.9)

2nd speed rpm : 325

Rack travel in mm : 5.10...5.30 Del.quantity cm3/: 3.3...3.7

100 s: (3.1...3.9) cm3 : 0.75

Spread 100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1020 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 875 Speed

: 188.0...190.0 Del.quantity

1000 : (185.0...193.0)

: 6.0 Spread cm3

1000 : (9.0)

RATED SPEED

1st version

Control lever

position degrees: 57...61

Testina:

1st rack travel in: 9.40 Speed rpm : 915...925

2nd rack travel in: 4.00

rpm : 985...1015 Speed

4th rack travel in: 1050

rom : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 15...19

Testina:

Speed rpm : 275 Minimum rack trave: 7.00

rpm : 400 Speed Rack travel in mm : 2.70...4.10 Rack travel in mm: 2.00 rpm : 435...510 Speed TORQUE CONTROL Dimension a mm : 5.3 Torque control curve - 1st version rpm : 875 1st speed Rack travel in m: 10.40...10.50 rpm : 700 2nd speed Rack travel in m: 12.00..12.20 rpm : 600 3rd speed Rack travel in m: 14.40...14.50 rpm : 510 4th speed Rack travel in m: 15.70...15.80 5th speed rpm : 450 Rack travel in m: 15.10...15.20 FUEL DELIVERY CHARACTERISTICS 1st version : 700 Speed rpm Del.quantity cm3/: -1000 s: (219.5...228.5) rpm : 510 Speed Del.quantity cm3/: 283.0...291.0 1000 s: (281.0...293.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.40 rpm : 915...925 Speed STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 160.0...220.0 1000 s: (150.0...230.0) LOW IDLE Speed rpm : 325 Del.quantity cm3/: 33.0...37.0 1000 s: (31.0...39.0) Remarks: See VDT-I-MAC 002 PLE dimension = 0.740'' - 0.820''The test specifications apply to testing of the injection-pump assembly with

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the genuine engine/nozzle-and-holder assembly

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MAC 11,0 x8 Test sheet : 3.4.90 Edition Replaces : ISO-4113 Test oil : 9 400 231 199 Combination no. Injection pump Pump designation : PES6P110A720RS6006 Governor : RQV300/600...950PA Governor design. 621-10K : * Cust. part no. Customer-spec. information Customer : MACK Engine : EME 6-250 R TEST BENCH REQUIREMENTS Test oil Outlet temp, °C : 40...45 Overflow valve : 2 417 413 011 Inlet press., bar: 1.5 Test nozzle holder assembly Opening pressure, bar : 300...308 : 0 681 230 710 Test lines Outside diameter

assembly : *

Opening pressure, bar : 300...308

Test lines : 0 681 230 710

Outside diameter x Wall thickness x Length mm : 6.35X1.70X915.0

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ______

BEGINNING OF DELIVERY

Prestroke mm : 3.2...3.3 : (3.15...3.35)

Rack travel in mm : 10.50

: 1-5-3-6-2-4

```
: 0-60-120-180-240-300
Phasing
Tolerance + - °
                   : 0.5 (0.75)
BASIC SETTING
               rpm: 950
1st speed
Rack travel in mm : 11.75
Del.quantity cm3/: 15.1...15.3
              100 s: (14.9...15.5)
              cm3 : 0.4
Spread
              100 s: (-)
2nd speed rpm : 300
Rack travel in mm : 5.15...5.35
Del.guantity cm3/: 2.3...2.8
              100 s: (-)
Spread
              cm3 : 0.4
              100 s: (-)
GUIDE SLEEVE POSITION
Control-lever position
            Degree: -1
             rpm : 1020
Rack travel in mm : 15.20...17.80
FULL LOAD DELIV. AT FULL LOAD STOP
1st version
              rpm : 950
Speed
                   : 151.0...153.0
Del.quantity
             1000 : (149.0...155.0)
                  : 4.0
Spread
             cm3
             1000
                  : (-)
RATED SPEED
1st version
Control lever
 position degrees: 61.0...66.0
Testing:
1st rack travel in: 10.90
            rpm : 990...1000
  Speed
2nd rack travel in: 4.00
Speed rpm: 1065...1095
4th rack travel in: 1125
Speed
            rpm : 0.00...1.00
  Speed
LOW IDLE 1
Control lever
 position degrees: 18...23
```

: 250

rpm

Testing:

Speed

Firing order

Minimum rack trave: 9.60

Speed rpm : 400 Rack travel in mm : 3.80...5.20 Rack travel in mm : 2.00

: 560...620 Speed man

TORQUE CONTROL

Dimension a mm : 0.85

Torque control curve - 1st version

: 950 1st speed rpm Rack travel in m: 11.90 : 850 2nd speed rpm

Rack travel in m: 12.05...12.15

: 750 3rd speed rpm

Rack travel in m: 12.30...12.40

4th speed rpm : 630
Rack travel in m: 12.75...12.85
5th speed rpm : 500
Rack travel in m: 12.00...12.10

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 850

Del.quantity cm3/: 160.5...165.5 1000 s: (158.5...167.5)

rpm_ : 630 Speed

Del.quantity cm3/: 187.5...191.5

1000 s: (185.5...193.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.90

: 990...1000 Speed rpm

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 130.0...170.0

1000 s: (-)

Rack travel in mm : 10.10...10.30

LOW IDLE

Speed rpm : 300 Del.quantity_cm3/ : 23.5...28.5

1000 s: (-)

Remarks:

: MACK # 313 GC 5151 P

See VDT-I-MAC 002

PLE dimension = 0.740'' - 0.820''

The test specifications apply to testing of the injection-pump assembly with the genuine engine/nozzle-and-holder assembly

Note remarks

: MAC 11.1 j : 23.3.90 Test sheet Edition

Replaces

Test oil : TSO-4113

: 9 400 231 201 Combination no.

Injection pump

Pump designation : PES6P120A720RS6016-1

Governor

: RQV300...850PA737K Governor design.

Cust. part no. ; *

Customer-spec. information Customer : MACK

: E6-300 4VH Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 0.3

Test nozzle holder

assembly

Openina

: 295...305 pressure, bar

Test lines : 9 681 230 735

Outside diameter

x Wall thickness

: 6.35X1.70X838.2 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

: 2.95...3.05 Prestroke mm

: (2.90...3.10)

Rack travel in mm: 10.50

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasina

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 850 1st speed

Rack travel in mm : 13.40...13.50

Del.quantity cm3/: 18.3...18.5

100 s: (18.1...18.7)

cm3 : 0.5Spread

100 s: (0.75)

rpm : 325 2nd speed

Rack travel in mm: 4.70...4.90
Del.quantity cm3/: 2.9...3.5
100 s: (2.7...3.7)
Spread cm3: 1.0

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1020 Speed

Rack travel in mm: 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed

: 183.5...185.5 Del.quantity

1000 : (181.5...187.5)

RATED SPEED

1st version

Control lever

position degrees: 58.5...63.5

Testina:

1st rack travel in: 12.40

Speed rpm : 885...895 2nd rack travel in: 4.00

rpm : 975...1005 Speed

4th rack travel in: 1050

rpm : 0.00...1.00Speed

LOW IDLE 1

Control lever

position degrees: 17.5...22.5

Testing:

Speed rpm Minimum rack trave: 8.70 : 400 Speed rpm

Rack travel in mm : 4.00...5.40

Rack travel in mm: 2.00 : 540...600 Speed rpm TORQUE CONTROL Dimension a mm : 0.85 Torque control curve - 1st version 1st speed rpm : 850 Rack travel in m: 13.40...13.50 od speed rpm : 700 2nd speed Rack travel in m: 13.80...13.90 rpm : 600 3rd speed Rack travel in m: 14.25...14.35 4th speed rpm : 500 Rack travel in m: 13.75...13.85 FUEL DELIVERY CHARACTERISTICS 1st version : 700 Speed rpm Del.quantity cm3/: -1000 s: (199.0...209.0) : 600 Speed rpm Del.quantity cm3/: 219.0...224.0 1000 s: (217.0...226.0) **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 12.40 rpm : 885...895 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm Del.quantity cm3/: 180.0...220.0 1000 s: (170.0...230.0) Rack travel in mm: 11.60...11.80

LOW IDLE

rpm : 325 Del.quantity cm3/: 29.0...35.0 1000 s: (27.0...37.0)

Remarks:

: MACK # 313 GC 5150

: P9

See VDT-I-MAC 002

PLE dimension = 0.740'' - 0.820''

The test specifications apply to testing of the injection-pump assembly with the genuine engine/nozzle-and-holder

assembly

G22

Note remarks

: MAC 11,1 j1 : 23.3.90 Test sheet

Edition

Replaces

: ISO-4113 Test oil

: 9 400 231 203 Combination no.

Injection pump

Pump designation : PES6P120A720RS6016-1

Governor

Governor design. : RQV300...850PA737-1K

Cust. part no.

Customer-spec. information Customer : MACK

: E6-275 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 0.3

Test nozzle holder

assembly

Opening

pressure, bar : 295...305

Test lines : 9 681 230 735

Outside diameter

x Wall thickness

: 6.35x1.70x838.2 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

: 2.95...3.05 Prestroke mm : (2.90...3.10)

Rack travel in mm: 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 850 1st speed

Rack travel in mm : 13.30...13.40

Del.quantity cm3/: 16.7...16.9

100 s: (16.5...17.1)

cm3 : 0.45Spread

100 s: (0.75)

rpm : 300 2nd speed

Rack travel in mm: 5.30...5.50
Del.quantity cm3/: 2.2...2.8
100 s: (2.0...3.0)
Spread cm3: 0.75

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1020

Speed Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed

Del.quantity : 107.0...107.0 1000 : (165.0...171.0)

RATED SPEED

1st version

Control lever

position degrees: 56.5...61.5

Testing:

1st rack travel in: 12.30

rpm : 890...900 Speed

2nd rack travel in: 4.00

rpm : 975...1005 Speed

4th rack travel in: 1050

rpm : 0.00...1.00Speed

LOW IDLE 1

Control lever

position degrees: 15.5...20.5

Testing:

Speed rpm Minimum rack trave: 8.70

: 400 rpm

Rack travel in mm : 4.30...5.70

Rack travel in mm : 2.00 Speed rpm : 560...620

TORQUE CONTROL : 0.85 Dimension a mm

Torque control curve - 1st version

: 850 1st speed rom

Rack travel in m: 13.30...13.40

: 700 2nd speed rpm

Rack travel in m: 13.70...13.80

3rd speed : 600 rpm

Rack travel in m: 14.15...14.25

4th speed rpm : 500

Rack travel in m: 13.65...13.75

FUEL DELIVERY CHARACTERISTICS

1st version

Speed : 700 rpm Del.quantity cm3/:-

1000 s: (180.0...190.0)

Speed : 600 rpm

Del.quantity cm3/: 202.0...207.0

1000 s: (199.5...209.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.30 rpm : 890...900 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 160.0...200.0

1000 s: (150.0...210.0)

LOW IDLE

Speed rpm : 300 Del.quantity cm3/ : 22.0...28.0

1000 s: (20.0...30.09)

Remarks:

: MACK # 313 GC 5150

: P11

See VDT-I-MAC 002

PLE dimension = 0.740'' - 0.820''

The test specifications apply to testing of the injection-pump assembly with the genuine engine/nozzle-and-holder assembly

Note remarks

: MAC 10,9 c2 Test sheet

Edition : 3.4.90

Replaces

Test oil : ISO-4113

: 9 400 231 207 Combination no.

Injection pump

Pump designation : PES6P110A720RS6008-1

Governor

: RQV300/500...975PA Governor design.

591-5K

Cust. part no.

Customer-spec. information Customer : MACK

: EE6-350/SCAC Engine

TEST BENCH REQUIREMENTS

Test oil

Outlet temp, °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.5

Test nozzle holder

assembly

Opening

: 300...308 pressure, bar

: 9 681 230 710 Test Lines

Outside diameter

x Wall thickness

: 6.35x1.70x990.6 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

: 3.20...3.30 Prestroke mm

: (3.15...3.35)

Rack travel in mm: 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.5 (0.75)

BASIC SETTING

1st speed rpm: 975

Rack travel in mm : 14.50...14.60

Del.quantity cm3/: 20.9...21.1

100 s: (20.7...21.3)

cm3 : 0.45Spread

100 s: (0.75)

2nd speed rpm : 300 Rack travel in mm : 5.30...5.50 Del.quantity cm3/ : 1.7...2.3 100 s: (1.5...2.5)

cm3 : 0.55Spread

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1020

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 975

: 209.0...211.0 Del.quantity

1000 : (207.0...213.0)

Spread cm3 : 4.5

: (7.5) 1000

LOW IDLE 1 Control lever

position degrees: 17.5...22.5

Testina:

: 250 Speed rpm Minimum rack trave: 9.80

: 400 Speed rpm

Rack travel in mm : 4.20...5.60

Rack travel in mm: 2.00

: 710...770 Speed rpm

TORQUE CONTROL

Dimension a mm : 1.50

Torque control curve - 1st version

: 975 1st speed rpm

Rack travel in m: 14.50 : 900 2nd speed rpm

Rack travel in m: 14.45...14.55

3rd speed : 700 rpm

Rack travel in m: 14.65...14.75

: 650 4th speed rpm

Rack travel in m: 14.15...14.25

rpm : 500 5th speed

Rack travel in m: 13.15...13.25

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700 Del.quantity cm3/ : 234.5...239.5 1000 s: (232.5...241.5)

: 650 rpm

Del.quantity cm3/: 231.0...237.0 1000 s: (229.0...239.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.50

rpm : 1015...1025 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 130.0...170.0

1000 s: (120.0...180.0)

LOW IDLE

Speed rpm : 300 Del.quantity cm3/: 17.0...23.0

1000 s: (15.0...25.0)

Remarks:

See VDT-I-MAC 002

PLE dimension = 0.740" - 0.820"

The test specifications apply to testing of the injection pump assembly with the genuine engine/nozzle-and-holder assembly

Note remarks

: MAC 11,1 k Test sheet : 23.3.90 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 9 400 231 209

Injection pump

Pump designation : PES6P120A720RS6061-1

Governor

: RQV300...850PA721-1K Governor design.

Cust. part no.

Customer-spec. information Customer : MACK

: E6-275-4VH Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 0.3

Test nozzle holder

assembly

Opening

: 295...305 pressure, bar

Test lines : 9 681 230 735

Outside diameter x Wall thickness

: 6.35x1.70x838.2 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

: 2.95...3.05 Prestroke mm

: (2.90...3.10)
Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 850 1st speed

Rack travel in mm : 13.30...13.40

Del.quantity cm3/: 16.7...16.9

100 s: (16.5...17.1)

Spread cm3 : 0.45

100 s: (0.75)

rpm : 300 2nd speed

Rack travel in mm: 5.30...5.50
Del.quantity cm3/: 2.2...2.8
100 s: (2.0...3.0)

cm3 : 0.75Spread

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1020

Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed

: 167.0...169.0 Del.quantity

1000 : (165.0...171.0)

RATED SPEED

1st version

Control lever

position degrees: 56.5...61.5

Testing:

1st rack travel in: 12.30

rpm : 890...900 Speed

2nd rack travel in: 4.00

rpm : 975...1005 Speed 4th rack travel in: 1050

rpm : 0.00...1.00Speed

LOW IDLE 1

Control lever

position degrees: 15.5...20.5

Testina:

Speed man Minimum rack trave: 8.70 : 400 rpm

Rack travel in mm : 4.30...5.70

Rack travel in mm: 2.00 : 560...620 Speed rom

TORQUE CONTROL

Dimension a mm : 0.85

Torque control curve - 1st version

rpm : 850 1st speed

Rack travel in m: 13.30...13.40

: 700 2nd speed rpm

Rack travel in m: 13.70...13.80

3rd speed rpm : 600

Rack travel in m: 14.15...14.25

4th speed rpm : 500

Rack travel in m: 13.65...13.75

FUEL DELIVERY CHARACTERISTICS

1st version

: 700 Speed rpm

Del.quantity cm3/: — 1000 s: (180.0...190.0)

: 600 Speed rpm

Del.quantity cm3/: 202.0...207.0 1000 s: (199.5...209.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.30 rpm : 890...900 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 130.0...170.0 1000 s: (120.0...180.0)

Rack travel in mm : 11.50...11.70

LOW IDLE

rpm : 300

Del.quantity cm3/: 22.0...28.0

1000 s: (20.0...30.0)

Remarks:

See VDT-I-MAC 002

PLE dimension = 0.740'' - 0.820''

The test specifications apply to testing of the injection-pump assembly with the genuine engine/nozzle-and-holder assembly

Note remarks

Test sheet Edition

: MAC 11,1 j2 : 23.3.90

Replaces

Test oil

: ISO-4113

Combination no.

: 9 400 231 211

Injection pump

Pump designation : PES6P120A720RS6016-1

Governor

Governor design.

: RQV300...850PA721-2K

Cust. part no.

Customer-spec. information Customer

: MACK

Engine

: E6-300 4VH

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 0.3

Test nozzle holder

assembly

Opening

pressure, bar

: 295...305

Test lines

: 9 681 230 735

Outside diameter

x Wall thickness

x Length mm

: 6.35X1.70X838.3

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Prestroke mm

: 2.95...3.05

: (2.90...3.10)

Rack travel in mm: 10.50

Firing order

: 1-5-3-6-2-4

H01

: 0-60-120-180-240-300 Phasina

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 850 1st speed

Rack travel in mm : 13.40...13.50

Del.guantity cm3/: 18.3...18.5

100 s: (18.1...18.7)

cm3 : 0.5Spread

100 s: (0.75)

2nd speed rpm : 325
Rack travel in mm : 4.70...4.90
Del.quantity cm3/: 2.9...3.5

100 s: (2.7...3.7)

cm3 : 1.0 Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1020Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 850

: 183.5...185.5 Del.quantity 1000

: (181.5...187.5)

: 5.0 Spread cm3

: (7.5) 1000

RATED SPEED

1st version

Control Lever

position degrees: 58.5...63.5

Testing:

1st rack travel in: 12.40

rpm : 885...895 Speed

2nd rack travel in: 4.00

rpm : 975...1005 Speed

4th rack travel in: 1050

: 0.00...1.00 Speed rpm

LOW IDLE 1

Control Lever

position degrees: 17.5...22.5

Testing:

Speed mar Minimum rack trave: 8.70

: 400 Speed rpm Rack travel in mm: 4.00...5.40 Rack travel in mm: 2.00 rpm : 540...600 Speed TORQUE CONTROL Torque control curve - 1st version rpm : 850 1st speed Rack travel in m: 13.40...13.50 rpm : 700 2nd speed Rack travel in m: 13.80...13.90 d speed rpm : 600 3rd speed Rack travel in m: 14.25...14.35 rpm : 500 4th speed Rack travel in m: 13.75...13.85 FUEL DELIVERY CHARACTERISTICS 1st version : 700 Speed rpm Del.quantity cm3/: -1000 s: (199.0...209.0) Speed rpm : 600 Del.quantity cm3/: 219.0...224.0 1000 s: (217.0...226.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.40 rpm : 885...895 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 180.0...220.0 1000 s: (170.0...230.0) Rack travel in mm : 12.00...12.20 LOW IDLE Speed rpm: 325 Del.quantity cm3/: 29.0...35.0 1000 s: (27.0...37.0) Remarks: : MACK #313 GC 5150 P : 15 See VDT-I-MAC 002 PLE dimension = 0.740'' - 0.820''

The test specifications apply to testing of the injection-pump assembly with the genuine engine/nozzle-and-holder assembly

H₀2

Note remarks

: MAC 11,0 w2 Test sheet Edition : 3.4.90

Replaces

Test oil : ISO-4113

Combination no. : 9 400 231 219

Injection pump

Pump designation : PES6P110A720RS6005-1

Governor

: RQV300...1050PA586-Governor design.

Cust. part no.

Customer-spec. information Customer : MACK

Engine : EM6-285

TEST BENCH REQUIREMENTS

Test oil

Outlet temp, °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 0.3

Test nozzle holder

assembly

Openina

: 300...308 pressure, bar

Test Lines : 9 681 230 727

Outside diameter x Wall thickness

: 6.35X1,70X990.6 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Prestroke mm : 2.8...2.9

: (2.75...2.95

Rack travel in mm: 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.5 (0.75)

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 13.10...13.20

Del.quantity cm3/: 16.8...17.0

100 s: (16.6...17.2)

cm3 : 0.5Spread

100 s: (0.75)

2nd speed rpm : 325
Rack travel in mm : 4.30...4.50
Del.quantity cm3/: 2.9...3.4

100 s: (2.7...3.6)

cm3 : 0.7Spread 100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1020

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

: 168.0...170.0 Del.quantity 1000 : (166.0...172.0)

: 5.0 cm3 Spread

1000 : (7.5)

RATED SPEED

1st version

Control lever

position degrees: 57.5...62.5

Testing:

1st rack travel in: 12.10

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

: 1190...1220 Speed rpm

4th rack travel in: 1275

: 0.00...1.00 Speed rpm

LOW IDLE 1

Control lever

position degrees: 16.5...21.5

Testing:

: 275 Speed rpm

Minimum rack trave: 8.90 Speed rpm : 425 Rack travel in mm : 6.10...7.50 Rack travel in mm : 2.00 Speed rpm : 735...795 TORQUE CONTROL Dimension a mm : 0.85 Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 13.10...13.20 rpm : 800 2nd speed Rack travel in m: 12.90...13.10 3rd speed rpm : 600 Rack travel in m: 13.75...13.85 4th speed rpm : 500 Rack travel in m: 13.40...13.60 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 800 Speed Del.quantity cm3/: -1000 s: (184.5...193.5) Speed rpm : 600 Del.quantity cm3/: 222.0...226.0 1000 s: (220.0...228.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.10 rpm : 1090...1100 Speed STARTING FUEL DELIVERY rpm : 100 Del.quantity cm3/: 140.0...180.0 1000 s: (130.0...190.0) LOW IDLE Speed rpm : 325 Del.quantity cm3/: 29.5...34.5 1000 s: (27.5...36.5) Remarks: See VDT-I-MAC 002 PLE dimension = 0.740'' - 0.820''

The test specifications apply to testing of the injection-pump assembly with the genuine engine/nozzle-and-holder assembly

Note remarks

Test sheet : MAC 11,1 j3 : 23.3.90

Edition Replaces

Test oil : ISO-4113

Combination no. : 9 400 231 221

Injection pump

Pump designation: PES6P120A720RS6016-2

Governor

: RQV325...900PA773K Governor design.

Cust. part no.

Customer-spec. information : MACK Customer

: EE6-350-4-VM Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 0.3

Test nozzle holder

assembly

Opening

: 295...305 pressure, bar

Test lines : 9 681 230 735

Outside diameter

x Wall thickness

: 6.35x1.70x838.2 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Prestroke mm : 2.85...2.95

: (2.80...3.00)

Rack travel in mm: 10.50

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 325

Rack travel in mm : 15.65...15.75

Del.quantity cm3/: 20.9...21.1

100 s: (20.7...21.3)

cm3 : 0.5Spread

100 s: (0.75)

2nd speed rpm : 900 Rack travel in mm : 5.70...5.90

Del.quantity cm3/ : 2.9...3.5 100 s: (2.7...3.7)

cm3 : 1.0 Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1020 Speed Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

: 900 Speed rpm

: 209.0...211.0 Del.quantity 1000 : (207.0...213.0)

: 5.0 cm3 Spread

1000 : (7.5)

RATED SPEED

1st version

Control lever

position degrees: 58.5...63.5

Testing:

1st rack travel in: 14.65

rpm : 940...950 Speed

2nd rack travel in: 4.00

: 1065...1095 Speed rpm

4th rack travel in: 1150

rpm : 0.00...1.00Speed

LOW IDLE 1

Control Lever

position degrees: 20...25

Testing:

Speed rpm Minimum rack trave: 8.60

rpm : 425 Speed Rack travel in mm : 5.80...7.20 Rack travel in mm : 2.00 Speed : 670...730 rom TORQUE CONTROL Dimension a mm : 1.15 Torque control curve - 1st version : 900 1st speed rpm Rack travel in m: 15.65...15.75 rpm : 700 2nd speed Rack travel in m: 15.95...16.05 rpm : 625 3rd speed Rack travel in m: 16.00...16.10 4th speed rpm : 500 Rack travel in m: 14.85...14.95 FUEL DELIVERY CHARACTERISTICS 1st version : 700 Speed rpm Del.quantity cm3/: -1000 s: (231.5...241.5) : 625 Speed rpm Del.quantity cm3/: 241.5...246.5 1000 s: (239.5...248.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 14.65 Speed rpm : 940...950 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 141.0...181.0 1000 s: (131.0...191.0) LOW IDLE Speed rpm : 325 Del.quantity cm3/ : 29.0...35.0 1000 s: (27.0...37.0) Remarks: : MACK # 313 GC 5150 P See VDT-I-MAC 002 PLE dimension = 0.740'' - 0.820''

The test specifications apply to testing of the injection-pump assembly with

H06

the genuine engine/nozzle-and-holder assembly

Note remarks

: Mac 11,1 L2 Test sheet 3.4.90 Edition

Replaces

Test oil : ISO-4113

Combination no. : 9 400 231 223

Injection pump

Pump designation : PES6P110A720RS6015-1

Governor

: RQV325...1050PA587-Governor design.

4K

. * Governer no.

Customer-spec. information : MACK

Customer

: EM6-237 Engine

TEST BENCH REQUIREMENTS

Test oil

Outlet temp, °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 0.3

Test nozzle holder

assembly

Opening

: 300...308 pressure, bar

Test Lines : 9 681 230 727

Outside diameter

x Wall thickness

: 6.35X1.70X990.6 x Lenath mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Prestroke mm

: 3.2...3.3 : (3.15...3.35)

Rack travel in mm: 1050

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.5 (0.75)

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 11.20...11.30

Del.guantity cm3/: 13.2...13.4

100 s: (13.0...13.6)

cm3 : 0.4Spread

100 s: (0.6)

rpm : 325 2nd speed

Rack travel in mm : 4.60...4.80 Del.quantity cm3/: 2.9...3.4

100 s: (2.7...3.6)

cm3 : 0.45Spread

100 s: (0.75)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1020

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

: 1050 Speed rpm

: 132.0...134.0 Del.quantity 1000 : (130.0...136.0)

: 4.0 Spread cm3

1000 : (6.0)

RATED SPEED

1st version Control Lever

position degrees: 55.5...60.5

Testing:

1st rack travel in: 10.20

Speed rpm : 1090...1100

2nd rack travel in: 4.00

rpm : 1170...1200 Speed

4th rack travel in: 1250

: 0.00...1.00 Speed rpm

LOW IDLE 1 Control lever

position degrees: 18.5...23.5

Testina:

Speed rpm Minimum rack trave: 8.90

rpm : 425 Speed Rack travel in mm : 6.10...7.50 Rack travel in mm : 2.00 rpm : 750...810 Speed TORQUE CONTROL Dimension a mm : 0.95 Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 11.20...11.30 nd speed rpm : 800 Rack travel in m: 11.25...11.35 2nd speed rpm : 600 3rd speed Rack travel in m: 12.15...12.25 4th speed rpm : 500 Rack travel in m: 11.75...11.85 FUEL DELIVERY CHARACTERISTICS 1st version : 800 Speed rpm Del.quantity cm3/: -1000 s: (144.5...153.5) Speed rpm : 600 Del.quantity cm3/: 179.5...183.5 1000 s: (177.5...185.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.20 rpm : 1090...1100 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 142.0...182.0 1000 s: (132.0...192.0) LOW IDLE Speed rpm : 325 Del.quantity cm3/: 29.5...34.5 1000 s: (27.5...36.5) Remarks: : MACK # 331GC5148P35 See VDT-I-MAC 002

assembly

H08

PLE dimension = 0.740'' - 0.820''

The test specifications apply to testing of the injection-pump assembly with the genuine engine/nozzle-and-holder

Note remarks

: MAC 11,1 L3 Test sheet : 3.4.90

Edition Replaces

: ISO-4113 Test oil

Combination no. : 9 400 231 225

Injection pump

Pump designation : PES6P110A720RS6015-1

Governor

: RQV325...1050PA721-Governor design.

Cust. part no.

Customer-spec. information Customer : MACK

Engine : EM6-237

TEST BENCH REQUIREMENTS

Test oil

Outlet temp, °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 0.3

Opening

: 300...308 pressure, bar

Test lines : 9 681 230 727

Outside diameter

x Wall thickness

: 6.35x1.70x990.6 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Prestroke mm : 3.2...3.3

: (3.15...3.35)

Rack travel in mm: 1050

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.5 (0.75)

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 11.20...11.30

Del.quantity cm3/: 13.2...13.4

100 s: (13.0...13.6)

cm3 : 0.4Spread

100 s: (0.6)

rpm : 325 2nd speed

Rack travel in mm : 4.60...4.80 Del.quantity cm3/: 2.9...3.4

100 s: (2.7...3.6)

cm3 : 0.45Spread

100 s: (0.75)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1020 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm: : 1050 Speed

: 132.0...134.0 Del.quantity

1000 : (130.0...136.0)

: 4.0 cm3 Spread

1000 : (6.0)

RATED SPEED

1st version

Control lever

position degrees: 55.5...60.5

Testing:

1st rack travel in: 1020

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

rpm : 1170...1200 rpm : 1250 Speed

Speed

: 0.00...1.00 Speed rpm

LOW IDLE 1

Control lever

position degrees: 18.5...23.5

Testina:

: 275 Speed mar

Minimum rack trave: 8.90 : 425 rpm

Rack travel in mm : 6.10...7.50

Rack travel in mm : 2.00 Speed rpm : 750...810

TORQUE CONTROL

Dimension a mm : 0.95

Torque control curve - 1st version

: 1050 1st speed rpm

Rack travel in m: 11.20...11.30

: 800 2nd speed man

Rack travel in m: 11.25...11.35

3rd speed rpm : 600

Rack travel in m: 12.15...12.25

4th speed

th speed rpm : 500 Rack travel in m: 11.75...11.85

FUEL DELIVERY CHARACTERISTICS

1st version

: 800 Speed rpm

Del.quantity cm3/: -

1000 s: (144.5...153.5)

rpm : 600 Speed

Del.quantity cm3/: 179.5...183.5

1000 s: (177.5...185.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.20

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 142.0...182.0 1000 s: (132.0...192.0)

Rack travel in mm : 10.10...10.30

LOW IDLE

Speed rpm

Del.quantity cm3/: 29.5...34.5

1000 s: (27.5...36.5)

Remarks:

See VDT-I-MAC 002

PLE dimension = 0.740'' - 0.820''

The test specifications apply to testing of the injection-pump assembly with the genuine engine/nozzle-and-holder

assembly

Note remarks

Test sheet : MAC 11,1 14 Edition : 23.3.90

Replaces

: ISO-4113 Test oil

Combination no. : 9 400 231 227

Injection pump

Pump designation: PES6P120A720RS6016-3

Governor

: RQV325...1050PA621-Governor design.

12K

Cust. part no.

Customer-spec. information Customer : MACK

Engine : EM6-300-4VH

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 0.2

Test nozzle holder

assembly

Openina

pressure, bar : 295...305

Test lines : 9 681 230 735

Outside diameter x Wall thickness

: 6.35x1.70x838.2 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

: 2.95...3.05 Prestroke mm : (2.90...3.10)

Rack travel in mm: 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 13.30...13.40

Del.quantity cm3/: 16.1...16.3

100 s: (15.8...16.6)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 325 Rack travel in mm : 5.70...5.90 Del.quantity cm3/ : 3.0...3.4 100 s: (2.8...3.7)

cm3 : 0.75Spread

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1100

Rack travel in mm : 15,20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

: 161.0...163.0 Del.quantity

1000 : (158.0...166.0)

: 6.0 cm3 Spread

1000 : (9.0)

RATED SPEED

1st version

Control lever

position degrees: 58...62

Testing:

1st rack travel in: 12.30

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

rpm : 1205...1235 Speed

4th rack travel in: 1290

rpm : 0.00...1.00Speed

LOW IDLE 1

Control lever

position degrees: 15...19

Testing:

rpm : 250 Speed

Minimum rack trave: 8.00 Speed rpm : 400 Rack travel in mm : 3.60...5.00 Rack travel in mm : 2.00 rpm : 515...595 Speed TORQUE CONTROL : 1.40 Dimension a mm Torque control curve - 1st version rpm : 1050 1st speed Rack travel in m: 13.30...13.40 rpm : 800 2nd speed Rack travel in m: 13.70...13.90 : 700 rpm 3rd speed Rack travel in m: 14.20...14.40 4th speed rpm : 630 Rack travel in m: 14.70...14.80 5th speed rpm : 500 Rack travel in m: 14.20...14.40 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 800 Del.quantity cm3/: — 1000 s: (182.0...192.0) rpm : 630 Speed Del.quantity cm3/: 219.0...225.0 1000 s: (216.0...228.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.30 rpm : 1090...1100 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 155.0...215.0 1000 s: (145.0...225.0) LOW IDLE Speed rpm : 325 Del.quantity cm3/: 30.0...34.0 1000 s: (28.0...37.0) Remarks: PLE dimension = 0.740'' - 0.820''The test specifications apply to test-

ing of the injection-pump assembly with

the genuine engine/nozzle-and-holder assembly

Note remarks

: MAC 11,1 j5 : 23.3.90 Test sheet Edition

Replaces

: ISO-4113 Test oil

Combination no. : 9 400 231 231

Injection pump

Pump designation : PES6P120A720RS6016-3

Governor

: RQV325...1050PA721-Governor design.

Cust. part no. : *

Customer-spec. information Customer : MACK

: EM6-300-4VH Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 0.2

Test nozzle holder assembly

Openina

: 295...305 pressure, bar

Test Lines : 9 681 230 735

Outside diameter x Wall thickness

: 6.35x1.70x838.2 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

: 2.95...3.05 Prestroke mm : (2.90...3.10)

Rack travel in mm: 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 13.30...13.40

Del.quantity cm3/: 16.1...16.3

100 s: (15.8...16.6)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 325
Rack travel in mm : 5.70...5.90
Del.quantity cm3/: 3.0...3.4

100 s: (2.8...3.7)

cm3 : 0.75Spread

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1100

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

: 161.0...163.0 Del.quantity

1000 : (158.0...166.0)

: 6.0 cm3 Spread

1000 : (9.0)

RATED SPEED

1st version

Control lever

position degrees: 58...62

Testing:

1st rack travel in: 12.30

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

: 1205...1235 Speed rpm

4th rack travel in: 1290

: 0.00...1.00 Speed rpm

LOW IDLE 1

Control Lever

position degrees: 15...19

Testing:

: 250 Speed rpm

Minimum rack trave: 8.90 : 400 Speed rpm Rack travel in mm: 3.60...5.00 Rack travel in mm: 2.00 rpm : 515...595 Speed TORQUE CONTROL Dimension a mm : 1.40 Torque control curve - 1st version st speed rpm : 1050 Rack travel in m: 13.30...13.40 1st speed : 800 2nd speed rom Rack travel in m: 13.70...13.90 : 700 3rd speed rpm Rack travel in m: 14.20...14.40 : 630 4th speed rpm Rack travel in m: 14.70...14.80 rpm : 500 5th speed Rack travel in m: 14.20...14.40 FUEL DELIVERY CHARACTERISTICS 1st version : 800 Speed rpm Del.quantity cm3/: — 1000 s: (183.0...191.0) Speed rpm : 630 Del.quantity cm3/: 219.0...225.0 1000 s: (216.0...225.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.30 rpm : 1090...1100 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 155.0...215.0 1000 s: (145.0...225.0) LOW IDLE Speed rpm: 325 Del.quantity cm3/: 30.0...34.0 1000 s: (28.0...37.0) Remarks: See VDT-I-MAC 002 PLE dimension = 0.740'' - 0.820''

The test specifications apply to test-

H14

ing of the injection-pump assembly with the genuine engine/nozzle-and-holder assembly

Note remarks

Test sheet : DEE 7,6 g 8 Edition : 01.02.90 : 7.4.89 Replaces Test oil : TS0-4113

Combination no. : 9 400 231 236

Injection pump

Pump designation : PES6P110A720RS3083-1

: 9 410 231 027 EP type number

Governor

: RSV475...1050P2A455-Governor design.

: 9 420 234 172 Governer no.

Customer-spec. information

: JOHN DEERE Customer

: 6466A Engine

: 151.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

: 9 681 271 022 Test Lines

Outside diameter

x Wall thickness

: 6.35X3.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 3.45...3.55 Prestroke mm

: (3.40...3.60)

Rack travel in mm: 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 13.6...13.9

100 s: (13.4...14.2)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 475.0 2nd speed Rack travel in mm : 5.9...6.1 Del.quantity cm3/: 1.4...1.9 100 s: (1.2...2.2)

cm3 : 0.4Spread

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

: 136.5...139.5 Del.quantity 1000 : (134.0...142.0)

: 4.00

cm3

1000 : (7.50)

RATED SPEED

Spread

1st version

Control lever

position degrees: 38...46

Testing:

1st rack travel in: 10.70

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

rpm : 1145...1155 Speed 3rd rack travel in: 4.00 rpm : 1150...1170 Speed

4th rack travel in: 1250

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 18...26

Setting point w/out bumper spring

: 475 rpm Rack travel in mm: 5.5

Testina:

: 100 Speed rpm Minimum rack trave: 19.00 : 475 rpm

Rack travel in mm : 5.90...6.10

TORQUE CONTROL

Dimension a mm : 0.40

Torque control curve - 1st version

rpm : 1050 1st speed

Rack travel in m: 11.70...11.80

rpm : 700 2nd speed

Rack travel in m: 12.10...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

: 700 Speed man

Del.quantity cm3/: 139.5...143.5 1000 s: (136.5...146.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.70

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 150.0...170.0

1000 s: (145.0...175.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

rpm : 475 Speed

Rack travel in mm : 5.90...6.10 Del.quantity cm3/: 14.5...19.5 1000 s: (12.0...22.0)

cm3 : 4.50 Spread 1000 s: (7.50)

Remarks:

: JOHN DEERE # RE30252

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Starting/full-load transition speed from holding magnet = 450 1/min.

Start-of-delivery mark 12° cam angle after start of delivery cyl. 1.

APPLICATION

Excavator

H16

Note remarks

: MAC 11,1 j6 Test sheet Edition : 23.3.90

Replaces

: ISO-4113 Test oil

: 9 400 231 239 Combination no.

Injection pump

Pump designation : PES6P120A720RS6016-1

Governor

: RQV325...850PA737-3K Governor design.

Cust, part no.

Customer spec. information Customer : MACK

: E6 300 4VH Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 0.2

Test nozzle holder

assembly

Opening

pressure, bar : 295...305

Test lines : 9 681 230 735

Outside diameter x Wall thickness

: 6.35x1.70x838.2 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

: 2.95...3.05 Prestroke mm

: (2.90...3.10)

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 13.20...13.30

Del.guantity cm3/: 18.3...18.5

100 s: (18.0...18.9)

cm3 : 0.5Spread

100 s: (0.75)

rpm : 325 2nd speed

Rack travel in mm : 4.70...4.90 Del.quantity cm3/: 3.0...3.4 100 s: (2.8...3.6)

cm3 : 1.0 Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1020

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 850 Speed

: 183.0...185.0 Del.quantity

1000 : (180.0...189.0)

: 5.0 Spread cm3

1000 : (7.5)

RATED SPEED

1st version

Control Lever

position degrees: 52...58

Testing:

1st rack travel in: 12.20 rpm : 890...900 Speed

2nd rack travel in: 4.00

rpm : 995...1025 Speed 4th rack travel in: 1050

: 0.00...1.00 Speed rom

LOW IDLE 1

Control lever

position degrees: 10...16

Testing:

: 250 Speed rpm Minimum rack trave: 6.60 : 325 rpm Rack travel in mm : 4.70...4.90 Rack travel in mm : 2.00 : 430...490 Speed rpm TORQUE CONTROL Dimension a mm : 0.60 Torque control curve - 1st version rpm : 850 1st speed Rack travel in m: 13.20...13.30 rpm : 700 2nd speed Rack travel in m: 13.40...13.50 rpm : 600 3rd speed Rack travel in m: 13.80...13.90 4th speed rpm : 500 Rack travel in m: 13.20...13.30 FUEL DELIVERY CHARACTERISTICS 1st version : 700 Speed rpm Del.quantity cm3/:-1000 s: (193.5...205.5) : 600 Speed rpm Del.quantity cm3/: 213.0...219.0 1000 s: (210.0...222.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.20 Speed rpm : 890...900 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 160.0...200.0 1000 s: (150.0...210.0) LOW IDLE Speed rpm: 325 Del.quantity cm3/: 30.0...34.0 1000 s: (28.0...36.0) Remarks:

assembly

H18

PLE dimension = 0.740'' - 0.820''

The test specifications apply to testing of the injection-pump assembly with the genuine engine/nozzle-and-holder

Note remarks

Test sheet : MAC 11,1 j7 : 23.3.90 Edition

Replaces

: ISO-4113 Test oil

: 9 400 231 241 Combination no.

Injection pump

Pump designation : PES6P120A720RS6016-1

Governor

Governor design.: RQS325...850PA721-5K

Cust. part no. : *

Customer-spec. information Customer : MACK

: E6 400 4VH Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 0.2

Opening

pressure, bar : 295...305

Test Lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.35X1.70X838.2 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

: 2.95...3.05 Prestroke mm

: (2.90...3.10)

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 1

BASIC SETTING

rpm: 850 1st speed

Rack travel in mm : 13.20...13.30

Del.quantity cm3/: 18.3...18.5

100 s: (18.0...18.9)

cm3 : 0.5Spread

100 s: (0.75)

2nd speed rpm : 325
Rack travel in mm : 4.70...4.90
Del.quantity cm3/: 3.0...3.4
100 s: (2.8...3.6)

cm3 : 1.0Spread

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1020 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed

: 183.0...185.0 Del.quantity

: (180.0...189.0) 1000

: 5.0 Spread cm3

1000 : (7.5)

RATED SPEED

1st version Control lever

position degrees: 52...58

Testing:

1st rack travel in: 12.20

rpm : 890...900 Speed

2nd rack travel in: 4.00

rpm : 995...1025 Speed

4th rack travel in: 1050

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 10...16

Testing:

Speed rpm Minimum rack trave: 6.60

Speed rpm : 325 Rack travel in mm : 4.70...4.90 Rack travel in mm : 2.00

: 430...490 Speed rpm

TORQUE CONTROL

Dimension a mm : 0.60

Torque control curve - 1st version

rpm : 850 1st speed

Rack travel in m: 13.20...13.30

2nd speed : 700 rpm

Rack travel in m: 13.40...13.50

: 600 3rd speed rpm

Rack travel in m: 13.80...13.90

: 500 4th speed rpm

Rack travel in m: 13.20...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

: 700 rpm Speed

Del.quantity cm3/:-

1000 s: (193.5...205.5)

: 600 Speed rpm

Del.quantity cm3/: 213.0...219.0

1000 s: (210.0...222.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.20

: 890...900 Speed rom

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 160.0...200.0

1000 s: (150.0...210.0)

LOW IDLE

Speed rpm: 325 Del.quantity_cm3/: 30.0...34.0

1000 s: (28.0...36.0)

Remarks:

See VDT-I-MAC 002

PLE dimension = 0.740'' - 0.820''

The test specifications apply to testing of the injection-pump assembly with the genuine engine/nozzle-and-holder

assembly

Note inst. in remarks column

Test sheet Edition : CUM 3,9 P7 : 26.3.90

replaces

: ISO 4113 Calibrating oil

: VE 6/12F1250 R123 Injection pump

Type number : 0 460 424 006 Customer Part-No. : 3 917 640

Customer-specific information

Customer : CDC

Engine : 4 BT 390

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

assembly : 1 688 901 016

Opening

pressure bar: 204...210

Perforated plate

diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

Prestroke mm : 0.3

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke mm: 2.0

mm: +0.02(0.06)

Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900 Setting value mm: 2,3...2,7

Supply-pump pressure:

1/min: 900 Setting value bar: 4,5...5,1

Full-load del. w/out charge press.:

1/min : 1100 Speed

Del.quantity cm3/ 1000H.: 85₂0...86,0

cm3/: 4,0 Dispersion

1000H.: (4,5)

Low-idle speed regulation:

1/min: 375

Del.quantity cm3/ 1000H.: 18,5...24,5 Dispersion cm3/: 5,5 1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1340

Del.quantity cm3/ 1000H: 25,5...31,5

Start:

1/min: 100 Speed Del.guantity mind cm3/1000H.: 97,0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 750 1st speed

TD travel mm: 3,8...4,4mm: (0,6...2,2)

1/min: 900 2nd speed

TD travel

mm: 2,3...2,7 mm: (1,8...2,2)

1/min: 1100 3rd speed

mm: 3,1...3,9 mm: (2,9...4,3) TD travel

Supply-pump pressure characteristic:

1st speed 1/min: 750

Supply-pump

pressure

bar: 3,8...4,4 bar: (3,6...4,6)

1/min: 900 2nd speed

H21

Supply-pump bar: 2,3...2,7 bar: (4,3...5,3) pressure 1/min: 1100 3rd speed Supply-pump bar: 5,3...5,9 bar: (5,1...6,1) pressure Overflow quantity at overflow valve: 1st speed 1/min: 600 : 15...30 Oveflow cm3/10s: quantity 1/min: 1250 : 20...50 2nd speed Overflow quantity cm3/10s: -Delivery-quant. and breakaway char.: 1st specu Del.quantity cms/: 0, 1000H.: -1st speed 1/min: 1400 cm3/: 0,0...3,02nd speed 1/min: 1340 Del.quantity cm3/: 25,5...31,5 1000H.: (16,5...28,5) 1/min: 1320 3rd speed Del.quantity cm3/: 13 1000H.: cm3/: 15,0...55,0 1/min: 1250 4th speed Del.quantity cm3/: 80,0...83,0 1000H.: 88,5...84,5 5th speed 1/min: 1100 Del.quantity cm3/: 85,0...86,0 1000H.: (82,5...88,5) 1/min: 750 6th speed Del.quantity cm3/: 88,5...92,5 1000H.: 86,5...94,5 1/min: 600 7th speed Del.quantity cm3/: 86,5...94,5 1000H.: (84,5...96,5) Zero delivery (stop): Mech. shutoff: Speed 1/min: 1250 Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: 1/min: 375 Speed Del.quantity cm3/: 0,0...3,0 max. 1000H.: -Idle delivery: 1/min: 375 1st speed Del.quantity cm3/: 18,5..24,5 1000H.: (16,5..26,5)

1/min: 450 2nd speed Del.quantity cm3/: 0,0...4,0 1000H.: -Automatic starting fuel delivery: 1/min: 130 1st speed Del.quantity cm3/: -1000H: 100,0 ind. 1/min: 200 2nd speed Del.quantity cm3/: - max. 1000H: 85,0 Shutoff electromagnet: Cut-in min. voltage : 20,0 Rated voltage : 24,0 Mounting and assembly dimensions: Designation Κ mm : 5,0...5,4 : 1,3...1,7 : 3,7 : 19,7...19,9 KF mm MS mm SVS max. mm XK mm : 13,3...16,7 mmHeavy-duty fuel-injection pump for DI-engines: only test using timingdevice-travel measuring device with metal jacket

Note inst. in remarks column

: CUM 3,9 P5 Test sheet Edition : 26.03.90

replaces

Calibrating oil : ISO 4113

: VE 4/12F1100 R123-1 Injection pump

: 0 460 424 007 Type number

Customer Part-No.: 3 917 653

Customer-specific information

Customer

: 4 BT 390 Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

: 1 688 901 016 assembly

Opening

bar: 207...210 pressure

Perforated plate

mm : 0.5 diameter

Test inj. tubing : 1 680 750 017

Outside diameter x Wall thickness : 2 mm: 840 x Length

Start of delivery

mm : 0.3Prestroke

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke mm: 2,0

mm: +0.02(0.06)

Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 900 Speed

Setting value mm: 2,3...2,7

Supply-pump pressure:

1/min: 900 Speed

Setting value bar: 4,5...5,1

Full-load del. w/out charge press.:

1/min: 900

Del.quantity cm3/

1000H.: 85,7...86,7

cm3/: 4,0 Dispersion

1000H.: (4,5)

Low-idle speed regulation:

1/min: 375 Speed

Speed Del.quantity cm3/ 1000H.: 18,5...24,5 Dispersion cm3/: 5,5

1000H.: (7,0)

Full-load speed regulation:

1/min: 1220 Speed

Del.quantity cm3/

1000H: 19,5...25,5

Start:

1/min: 100 Speed Del.quantity

cm3/1000H.: 97,0 mind

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 750 1st speed

mm: 1,1...1,9 mm: (0,8...2,2) TD travel

1/min: 900 2nd speed

mm: 2,3...2,7 mm: (1,8...3,2) TD travel

1/min: 1100 3rd speed

TD travel

mm: 3,1...3,9 mm: (2,8...4,2)

Supply-pump pressure characteristic:

1/min: 750 1st speed

Supply-pump

bar: 3,8...4,4 1/min: 900 pressure

2nd speed

Supply-pump

bar: 4,5...5,1 pressure

1/min: 1100 3rd speed

Supply-pump bar: 5,3...5,9 pressure Overflow quantity at overflow valve: 1st speed 1/min: 600 : 41...83 Oveflow cm3/10s: (26...98) quantity 1/min: 1100 2nd speed : 55...138 Overflow quantity cm3/10s: (40...153) Delivery-quant. and breakaway char .: 1st speed Del.quantity cm3/: 0, 1000H.: -1st speed 1/min: 1270 cm3/: 0.0...3.01/min: 1200 cm3/: 15,0...55,0 2nd specu Del.quantity cms/: 1000H.: -2nd speed 1/min: 1220 3rd speed Del.quantity cm3/: 19,5...25,5 1000H.: (16,5...28,5) 1/min: 1100 4th speed Del.quantity cm3/: 80,5...83,5 1000H.: (79,0...85,0) 1/min: 900 5th speed Del.quantity cm3/: 85,7...86,7 1000H.: (83,2...89,2) 1/min: 750 6th speed Del.quantity cm3/: 85,8...89,8 1000H.: (83,8...91,8) 7th speed 1/min: 600 Del.quantity cm3/: 83,0...91,0 1000H.: (81,0...93,0) Zero delivery (stop): Mech. shutoff: 1/min: 1100 Speed Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: 1/min: 375 Speed ELAB volt: cm3/: 0.0...3.0

1/min: 450

Del.quantity cm3/: 0,0...4,0 1000H.: -

Del.quantity cm3/: 0, 1000H.: -Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 18,5..24,5 1000H.: (16,5..26,5) Automatic starting fuel delivery:

1/min: 130 1st speed cm3/: -Del.quantity 1000H: 100,0 ind.

1/min: 200 2nd speed Del.quantity cm3/: -max. 1000H: 85,0

Shutoff electromagnet:

Cut-in

min. voltage : 20,0 : 24,0 Rated voltage

Mounting and assembly dimensions:

Designation

mm KF : 5,0...5,4 mm : 1,4...1,6 MS mm : 3,9 SVS max. : 18,8...20,8 XK mm : 13,2...16,6 XL mm

Remarks:

Heavy-duty fuel-injection pump for DI-engines: only test using timingdevice-travel measuring device with metal jacket

2nd speed

Note inst. in remarks column

: CUM 3,9 P6 Test sheet Edition : 26.3.90

replaces

: ISO 4113 Calibrating oil

: VE 4/12F1250 R123-10 Injection pump

Type number : 0 460 424 019 Customer Part-No. : 3 917 656

Customer-specific information

Customer : CDC

Engine : 4 BTA 3,9

TEST BENCH REQUIREMENTS

Calibrating oil return temp.

with thermometer : 40...48 : 42...50 electronically

Inlet press., bar: 0,35

Calibrating nozzle-holder

: 1 688 901 016 assembly

Opening |

bar: 204...210 pressure

Perforated-plate

mm : 0.5diameter

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm : 840 x Length

Start of delivery

Prestroke

e mm: 0,3 (from BDC): +0,02(0,04)

Start of delivery block Piston stroke mm: 1,7

mm: +0,02(0,06)

Outlet

Injection pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 850 Speed

Setting value mm: 3,7...4,1

Supply-pump pressure:

1/min: 850 Setting value bar: 5,9...6,5

Full-load del. w/out charge press.:

1/min: 1100 Speed

Del.quantity cm3/ 1000H.: 90,5...91,5 Dispersion cm3/: 4,0 1000H.: (4,5)

Low-idle speed regulation:

1/min: 375 Speed

Del.quantity cm3/

1000H.: 22,0...28,0 cm3/: 5,5

Dispersion 10004.: (7,0)

Full-load speed regulation:

1/min: 1340 Speed

Del.quantity cm3/

1000H: 28,0...34,0

Start:

1/min: 100 Speed

Del.quantity

mind cm3/1000H.: 105,0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed

1/min: 500 mm: 1,6...2,4 mm: (1,3...2,7) TD travel

1/min: 850 2nd speed

mm: 3,7...4,1 mm: (3,2...4,6) TD travel

1/min: 1100 3rd speed

mm: 4,6...5,4 mm: (4,3...5,7) TD travel

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

bar: 4,3...4,9 1/min: 850 pressure 2nd speed

Supply-pump

bar: 5,8...6,5 pressure

3rd speed 1/min: 1100

Supply-pump bar: 6,7...7,3 pressure Overflow quantity at overflow valve: 1/min: 500 1st speed : 41...83 Oveflow cm3/10s: (26...98) quantity 1/min: 1250 2nd speed Overflow : 55...138 quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1/min: 1400 1st speed Del.quantity cm3/: 0,0...3,0 1000H.: -2nd speed 1/min: 1340 Del.quantity cm3/: 28,0...34,0 1000H.: (25,0...37,0) 1/min: 1290 3rd speed Del.quantity cm3/: 00/0....78,0) 1/min: 1250 4th speed Del.quantity cm3/: 84,5...87,5 1000H.: (83,0...89,0) 1/min: 1100 5th speed Del.quantity cm3/: 90,5...91,5 1000H.: (88,0...94,0) 1/min: 850 6th speed Del.quantity cm3/: 94,5...98,5 1000H.: (92,5...100,5) 7th speed 1/min: 500 Del.quantity cm3/: 82,0...90,0 1000H.: (80,0...92,0) Zero delivery (stop): Mech. shutoff: 1/min: 1250 Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: 1/min: 375 Speed Del.quantity cm3/: 0,0...3,0 max. 1000H.: -Idle delivery: 1/min: 375 1st speed Del.quantity cm3/: 22,0..28,0 1000H.: (20,0..30,0) 1/min: 450 2nd speed Del.quantity cm3/: 0,0...,4,0 1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130
Del.quantity cm3/: ind. 1000H: 105,0

2nd speed 1/min: 250
Del.quantity cm3/: max. 1000H: 105,0

Shutoff electromagnet:

Cut-in

min. voltage : 20,0 Rated voltage : 24,0

Mounting and assembly dimensions:

Designation

K mm : KF mm : 5,0...5,4
MS mm : 0,6...1,0
XK mm : XL mm : -

Remarks:

Note inst. in remarks column

: CUM 3,9 P9 Test sheet : 10.04.90 Edition

replaces

Calibrating oil : ISO 4113

Injection bumb : VE 4/12F1250 R301-1

: 0 460 424 045 Type number

Customer-specific information

Customer : CDC

: 4 BT Engine

k: 77 Power 1/mi: 2500 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Openina (

bar: 250...253 pressure

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness mm: 840 x Length

Start of delivery

mm : 0.3Prestroke

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke mm: 1,0

mm: +-0.02(0.06)

Outlet

Injection-pump setting values Test specifications in parentheses

Timing device travel:

1/min: 1100 Speed Charge press. hPa: 1000 Setting value mm: 2,5...2,9 KSB solenoid-operated valve volt: 12.0

Supply-pump pressure:

1/min: 1100 Speed Charge press. hPa: 1000 Setting value bar: 5,8...6,4

KSB solenoid-operated volt: 12,0

Full-load del. with charge press.:

1/min: 850 Charge press. hPa: 1000 Del.quantity cm3/ 1000H.: 74,5...75,5

KSB solenoid-operated volt : 12,0 cm3/ : 4,0 Dispersion 1000H: (4,5)

Full-load del. w/out charge press.:

 $1/\min : 500$

Del.quantity cm3/

1000H.: 49,5...50,5

KSB solenoid-operated volt: 12,0 valve

Low-idle speed regulation:

Speed 1/min: 400 Charge press. hPa: -Charge press. ...Del.quantity cm3/ 1000H.: 9,0...13,0

KSB solenoid-operated volt: 12,0 cm3/: 5,5 valve Dispersion 1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1330 Charge press. hPa: 1000 Del.quantity cm3/

1000H: 56,0...62,0

KSB solenoid-operated volt: 12,0 valve

Start:

Speed 1/min: 100 Charge press. hPa: -Del.quantity cm3/1000H.: 80,0 mind

valve volt: 12,0	Overflow quantity at overflow valve
Inspection-pump test specifications Test specifications in parentheses	1st speed 1/min: 500 Charge press. hPa: - KSB solenoid-operated
Timing-device characteristic:	+ valve volt: 12,0 + Oveflow : 41,83
1st speed 1/min: 400 Charge press. hPa: -	quantity cm3/10s: (2698) 2nd speed 1/min: 1250 Charge press. hPa: 1000
TD travel mm: 3,04,0	+ KSB solenoid-operated + valve volt: 12,0
KSB solenoid-operated valve volt: -	+ Overflow : 55138 + quantity cm3/10s: (40153)
2nd speed 1/min: 850 Charge press. hPa: 1000 TD travel mm: 0,61,4	Delivery-quant. and breakaway char.
KSB solenoid-operated	1st speed 1/min: 700* Charge-air pressure-setting
valve volt: 12,0 3rd speed 1/min: 1100	+ point hPa: 500 + LDA stroke mm: 7,4
Charge press. hPa: 1000 TD travel mm: 2,52,9 mm: (2,03,4)	+ KSB solenoid-operated + valve volt: 12,0 + Del.guantity cm3/: 65,066,0
KSB solenoid-operated valve volt: 12,0	Del.quantity cm3/: 65,066,0 1000H.: (61,569,5) 2nd speed 1/min: 1500
4th speed 1/min: 1250 Charge press. hPa: 1000	Charge press. hPa: 1000 KSB solenoid-operated valve volt: 12,0
TD travel mm: 2,93,7 mm: (2,64,0) KSB solenoid-operated	Del.quantity cm3/: 0,03,0
valve volt: 12,0	The displacement of the state o
Supply-pump pressure characteristic: 1st speed 1/min: 500	+ KSB solenoid-operated + valve volt: 12,0 + Del.quantity cm3/: 0,015,0
Charge press. hPa: 1000 Supply-pump	1000H.: - 4th speed 1/min: 1400
pressure bar: 3,13,7 KSB solenoid-operated	+ Charge press. hPa: 1000 + KSB solenoid-operated
valve volt: 12,0 2nd speed 1/min: 850 Charge press. hPa: 1000	valve volt: 12,0 - Del.quantity cm3/: 15,055,0 - 1000H.: -
Supply-pump pressure bar: 4,85,4	+ 5th speed 1/min: 1330 + Charge press. hPa: 1000
KSB solenoid-operated valve volt: 12,0 3rd speed 1/min: 1100	+ KSB solenoid-operated + valve volt: 12,0 - Del.quantity cm3/: 56,062,0 1000H.: (53,065,0)
Charge press. hPa: 1000 Supply-pump	1000H.: (53,065,0) + 6th speed 1/min: 1250
pressure bar: 5,86,4 KSB solenoid-operated	Charge press. hPa: 1000 KSB solenoid-operated
valve volt: 12,0 4th speed 1/min: 1250 Charge press. hPa: 1000	+ valve volt: 12,0 - Del.quantity cm3/: 71,074,0 - 1000H.: (69,575,5)
Supply-pump pressure bar: 6,57,1	+ /th speed 1/min: 1700 + Charge press. hPa: 1000
KSB solenoid-operated valve volt: 12,0	+ KSB solenoid-operated + valve volt: 12,0

Del.quantity cm3/: 72,5...75,5 1000H.: (70,5...77,5) 1/min: 850 8th speed Charge press. hPa: 1000 KSB solenoid-operated volt: 12,0 cm3/: 74,5...75,5 1000H: (72,0...78,0) 1/min: 500 valve Del.guantity 9th speed Charge press. hPa: -KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: 49,5...50,5 1000H: (46,0...54,0) Zero delivery (stop): Mech. shutoff: Speed 1/min: 1250 Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: Speed 1/min: 400 ELAB volt: 12,0 Del.quantity cm3/: 0,0...3,0 1000H .: max. Idle delivery: 1/min: 400 1st speed KSB solenoid-operated volt: 12,0 valve Del.quantity cm3/: 9.0...13.0 1000H.: (6,0...16,0) 1/min: 500 2nd speed KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: 0,0...4,0 1000H .: -Automatic starting fuel delivery: 1/min: 220 1st speed Charge press. hPa: -

KSB solenoid-operated volt: 12,0 valve

Del.quantity cm3/: -1000H: 80,0 ind.

1/min: 320 2nd speed

Charge press. hPa: -Del.quantity cm3/: -max. 1000H: 80,0

Shutoff electromagnet:

Cut-in

min. voltage : 10,0 Rated voltage

Mounting and assembly dimensions:

Designation

K mm KF mm MS : 1,4...1,8 mm SVS max. mm XK mm XL

mm

Remarks:

: C.D.C. # 391 1242

* Correction at adjusting nut (46)

Operate control lever after each manifold-pressure compensator pressure change.

* Unscrew KSB ball valve 2 mm

Note inst. in remarks column

: CUM 3,9 P11 Test sheet Edition : 17.04.90

replaces

Calibrating oil : ISO 4113

Injection pump : VE 4/12F1250 R301-1

Type number : 0 460 424 045 Customer Part-No. : 3 911 243

Customer-specific information

Customer : CDC

Engine : 4 BT

k: 77 Power 1/mi: 2500 Speed

TEST BENCH REQUIREMENTS

Calibrating oil return temp.

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Openina

bar: 250...253 pressure

Perforated-plate

mm : 0.5diameter

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

mm : 0.3Prestroke

(from BDC): +0.02(0.04)

Start of delivery block mm: 1,0 Piston stroke

mm: +-0.02(0.06)

Outlet

Injection-pump setting values Test specifications in parentheses Timing-device travel:

1/min: 1100 Charge press. hPa: 1000 Setting value mm: 2,5...2,9

KSB solenoid-operated valve volt: 24,0

Supply-pump pressure:

1/min: 1100 Speed Charge press. hPa: 1000 Setting value bar: 5,8...6,4

KSB solenoid-operated valve volt: 24,0

Full-load del. with charge press.:

1/min: 850 Speed Charge press. hPa: 1000

Del.quantity cm3/ 1000H.: 74,5...75,5

KSB solenoid-operated valve volt: 24,0 cm3/:4,0Dispersion 1000H : (4,5)

Full-load del. w/out charge press.:

1/min: 500 Speed

Del.quantity cm3/ 1000H.: 49,5...50,5

KSB solenoid-operated volt: 24,0 valve

Low-idle speed regulation:

Speed 1/min: 400 Charge press. hPa: -Del.quantity cm3/

1000H.: 9,0...13,0

KSB solenoid-operated volt: 24,0 cm3/: 5,5 valve Dispersion 1000H.: (7,0)

Full-load speed regulation:

1/min: 1330 Speed Charge press. hPa: 1000

Del.quantity cm3/ 1000H: 56,0...62,0

KSB solenoid-operated valve volt: 24,0

Start:

1/min: 100 Speed Charge press. hPa: -

Del.quantity :-	1	KSB solenoid-operated
mind cm3/1000H.: 80,0	1	valve volt: 24,0
KSB solenoid-operated	+	,
valve volt: 24,0	<u>†</u>	Overflow quantity at overflow valve:
Inspection-pump test specifications	I	1st speed 1/min: 500
Test specifications in parentheses	+	Charge press. hPa: -
	+	KSB solenoid-operated
Timing-device characteristic:	+	valve volt: 24,0
	†	Oveflow : 4183
Act and Almin, 1004	†	quantity cm3/10s: (2698) 2nd speed 1/min: 1250
1st speed 1/min: 400* Charge press. hPa: -	Ι	Charge press. hPa: 1000
TD travel mm: 3,04,0	1	KSB solenoid-operated
mm: -	1	valve volt: 24,0
KSB solenoid-operated	+	Overflow : 55138
valve volt: -	+	quantity cm3/10s: (40153)
2nd speed 1/min: 850	+	
Charge press. hPa: 1000	+	Delivery-quant. and breakaway char.:
TD travel mm: 0,61,4	†	1-t 1/ 700t
mm: (0,31,7)	†	1st speed 1/min: 700*
KSB solenoid-operated valve volt: 24,0	I	Charge-air pressure-setting point hPa: 500
3rd speed 1/min: 1100	I	LDA stroke mm: 7,4
Charge press. hPa: 1000	1	KSB solenoid-operated
TD travel mm: 2,52,9	+	valve volt: 24.0
mm: (2,03,4)	+	Del.quantity cm3/: 65.066.0 1000H.: (61.569.5)
KSB solenoid-operated	+	1000H.: (61,569,5)
valve volt: 24,0	+	2nd speed 1/min: 1500
4th speed 1/min: 1250	†	Charge press. hPa: 1000
Charge press. hPa: 1000	Ť	KSB solenoid-operated valve volt: 24,0
TD travel mm: 2,93,7 mm: (2,64,0)	Ι	Del quantity cm3/: 0.0 3.0
KSB solenoid-operated	I	Del.quantity cm3/: 0,03,0 1000H.: -
valve volt: 24,0	+	3rd speed 1/min: 1450
,	+	Charge press. hPa: 1000
Supply-pump pressure characteristic:	+	KSB solenoid-operated
	+	valve volt: 24,0
1st speed 1/min: 500	†	Del.quantity cm3/: 0,015,0 1000H.: -
Charge press. hPa: 1000 Supply-pump	Ι	4th speed 1/min: 1400
pressure bar: 3,13,7	1	Charge press. hPa: 1000
KSB solenoid-operated	+	KSB solenoid-operated
valve volt: 24,0	+	valve volt: 24,0
2nd speed 1/min: 850	+	Del.quantity_cm3/: 15,055,0
Charge press. hPa: 1000	+	1000H.: -
Supply-pump	†	5th speed 1/min: 1330
pressure bar: 4,85,4	Ī	Charge press. hPa: 1000 KSB solenoid-operated
KSB solenoid-operated valve volt: 24,0	I	valve volt: 24,0
3rd speed 1/min: 1100	1	Del.quantity cm3/: 56,062,0
Charge press. hPa: 1000	+	1000H.: (53,065,0)
Supply-pump	+	6th speed 1/min: 1250
pressure bar: 5,86,4	+	Charge press. hPa: 1000
KSB solenoid-operated	+	KSB solenoid-operated
valve volt: 24,0	+	valve volt: 24,0
4th speed 1/min: 1250	†	Del.quantity cm3/: 71,074,0
Charge press. hPa: 1000	I	1000H.: (69,575,5) 7th speed 1/min: 1100
Supply-pump pressure bar: 6.5. 7.1	I	Charge press. hPa: 1000

KSB solenoid-operated volt: 24,0 valve cm3/: 72,5...75,5 Del.quantity 1000H.: (70,5...77,5) 1/min: 850 8th speed hPa: 1000 Charge press. KSB solenoid operated volt: 24,0 cm3/: 74,5...75,5 1000H: (72,0...78,0) valve Del.quantity 9th speed 1/min: 500 Charge press. hPa: -KSB solenoid-operated volt: 24,0 valve Del.quantity cm3/: 49,5...50,5 1000H: (46,0...54,0) Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1250 Del.quantity cm3/: 0..3 1000H.: -

Electr. shutoff:

Speed 1/min: 400
ELAB volt: Del.quantity cm3/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 400
KSB solenoid-operated
valve volt: 24,0
Del.quantity cm3/: 9,0...13,0
1000H.: (6,0...16,0)
2nd speed 1/min: 500
KSB solenoid-operated
valve volt: 24,0
Del.quantity cm3/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 220
Charge press. hPa: KSB solenoid operated
valve volt: 24,0
Del.quantity cm3/: ind. 1000H: 80,0

2nd speed 1/min: 320 Charge press. hPa: -KSB solenoid-operated valve volt: 24,0 Del.quantity cm3/: max. 1000H: 80,0

Shutoff electromagnet:

Cut-in

min. voltage : 20,0 Rated voltage : 24,0

Mounting and assembly dimensions:

Designation

K mm : KF mm : MS . mm : 1,4...1,8
SVS max . mm : 2,7
XK mm : XL mm : -

Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

- * Correction at adjusting nut (46)
- * Unscrew KSB ball valve 2 mm

Note inst. in remarks column

: CUM 3,9 P13 Test sheet : 17.04.90 Edition

replaces

Calibrating oil : ISO 4113

: VE 4/12F1250 R301-1 Injection pump

: 0 460 424 045 Type number

Customer Part-No.: 3 914 884

Customer-specific information

Customer : CDC

: 4 BT Engine

k: 77 Power 1/mi: 2500 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Openina

bar: 250...253 pressure

Perforated plate

diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

mm : 0.3Prestroke

(from BDC): +0.02(0.04)

Start of delivery block Piston stroke mm: 1,0

mm: +0.02(0.06)

Outlet.

Injection pump setting values Test specifications in parentheses Timing-device travel:

1/min: 1100 Speed Charge press. hPa: 1000 Setting value mm: 2,5...2,9

KSB solenoid-operated volt: 12,0 valve

Supply-pump pressure:

1/min: 1100 Speed Charge press. hPa: 1000 Setting value bar: 5,8...6,4

KSB solenoid-operated valve volt: 12,0

Full-load del. with charge press.:

1/min: 850 Speed Charge press. hPa: 1000 Del.quantity cm3/ 1000H.: 74,5...75,5

KSB solenoid-operated volt: 12,0 valve cm3/:4,0Dispersion 1000H : (4,5)

Full-load del. w/out charge press.:

1/min: 500 Speed

Del.quantity cm3/ 1000H.: 49,5...50,5

KSB solenoid-operated valve volt: 12,0

Low-idle speed regulation:

1/min: 400 Speed Charge press. hPa: -Del.quantity cm3/ 1000H.: 9,0...13,0

KSB solenoid-operated volt: 12,0 cm3/: 5,5 1000H.: (7,0) valve Dispersion

Full-load speed regulation:

Speed 1/min: 1330 Charge press. hPa: 1000

Del.quantity cm3/ 1000H: 56,0...62,0

KSB solenoid-operated valve volt: 12,0

Start:

Speed 1/min: 100 Charge press. hPa: -

mind cm3/1000H.: 80,0	+ KSB solenoid-operated + valve volt: 12,0
KSB solenoid-operated valve volt: 12,0	Overflow quantity at overflow valve:
Inspection-pump test specifications Test specifications in parentheses	T 1st speed 1/min: 500 - Charge press. hPa: - - KSB solenoid-operated
Timing-device characteristic:	valve volt: 12,0 Oveflow : 4183 quantity cm3/10s: (2698)
1st speed 1/min: 400* Charge press. hPa: -	+ 2nd speed 1/min: 1250 + Charge press. hPa: 1000
TD travel mm: 3,04,0 mm: -	+ KSB solenoid-operated + valve volt: 12,0
KSB solenoid-operated valve volt: - 2nd speed 1/min: 850	- Overflow : 55138 - quantity cm3/10s: (40153)
Charge press. hPa: 1000	Delivery-quant. and breakaway char.:
TD travel mm: 0,61,4 mm: (0,31,7) KSB solenoid-operated	1st speed 1/min: 700* Charge-air pressure-setting
valve volt: 12.0 3rd speed 1/min: 1100	point hPa: 500 LDA stroke mm: 7,4
Charge press. hPa: 1000 TD travel mm: 2,52,9	KSB solenoid-operated valve volt: 12,0
mm: (2,03,4) KSB solenoid-operated	Del.quantity cm3/: 65,066,0 1000H.: (61,569,5)
valve volt: 12.0 4th speed 1/min: 1250	2nd speed 1/min: 1500 Charge press. hPa: 1000
Charge press. hPa: 1000 TD travel mm: 2,93,7	+ KSB solenoid-operated + valve volt: 12,0
mm: (2,64,0) KSB solenoid—operated	Del.quantity cm3/: 0,03,0
valve volt: 12,0	- 3rd speed 1/min: 1450 - Charge press. hPa: 1000
Supply-pump pressure characteristic:	+ KSB solenoid-operated + valve volt: 12.0
1st speed 1/min: 500 Charge press. hPa: 1000	Del.quantity cm3/: 0,015,0
Supply-pump pressure bar: 3,13,7	+ 4th speed 1/min: 1400 + Charge press. hPa: 1000
KSB solenoid-operated valve volt: 12,0 2nd speed 1/min: 850	+ KSB solenoid-operated + valve volt: 12,0
Charge press. hPa: 1000	Del.quantity cm3/: 15,055,0
Supply-pump pressure bar: 4,85,4	+ 5th speed 1/min: 1330 + Charge press. hPa: 1000
KSB solenoid-operated valve volt: 12,0	+ KSB solenoid-operated + valve volt: 12,0 + Del.quantity cm3/: 56,062,0
3rd speed 1/min: 1100 Charge press. hPa: 1000	1000H.: (53,065,0) + 6th speed 1/min: 1250
Supply-pump pressure bar: 5,86,4 KSB solenoid-operated	Charge press. hPa: 1000 KSB solenoid-operated
valve volt: 12,0	valve volt: 12,0 Del.quantity cm3/: 71,074,0 10004: (69,575,5)
4th speed 1/min: 1250 Charge press. hPa: 1000	10004: (69,575,5) 7th speed 1/min: 1100
Supply-pump pressure bar: 6,57,1	+ 7th speed 1/min: 1100 + Charge press. hPa: 1000

KSB solenoid-operated volt: 12,0 / cm3/: 72,5...75,5 1000H.: (70,5...77,5) Del.quantity 8th speed 1/min: 850 Charge press. hPa: 1000 KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: 74,5...75,5 1000H: (72,0...78.0) 1/min: 500 9th speed Charge press. hPa: -KSB solenoid-operated volt: 12,0 Del.quantity cm3/: 49,5...50,5 1000H: (46,0...54,0) Zero delivery (stop): Mech. shutoff: 1/min: 1250 Speed Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: Speed 1/min: 400 volt: -Del.quantity cm3/: 0,0...3,0 max. 1000H.: -Idle delivery: 1st speed 1/min: 400 KSB solenoid operated valve volt: 12,0 Del.quantity cm3/: 9,0...13,0 1000H.: (6,0...16,0) 1/min: 500 2nd speed KSB solenoid-operated volt: 12,0 valve Del.quantity cm3/: 0,0...4,0 1000H.: -Automatic starting fuel delivery: 1st speed 1/min: 220 Charge press. hPa: -KSB solenoid operated volt: 12,0 valve Del.quantity cm3/: -1000H: 80,0 ind. 1/min: 320 2nd speed Charge press. hPa: -KSB solenoid-operated volt: 12,0 Del.quantity cm3/: - max. 1000H: 80,0

Shutoff electromagnet:

Cut-in

min. voltage : 10,0 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm : KF mm : MS mm : 1,4...1,8
SVS max. mm : 2,7
XK mm : XL mm : -

Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

- * Correction at adjusting nut (46)
- * Unscrew KSB ball valve 2 mm

Note inst. in remarks column

: CUM 3,9 P10 Test sheet : 17.04.90 Edition

replaces

Calibrating oil : ISO 4113

: VE 4/12F1250 R301-1 Injection pump

: 0 460 424 045 Type number

Customer Part-No.: 3 914 885

Customer-specific information

Customer : CDC

Engine : 4 BT

k: 77 Power 1/mi: 2500 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40...48 : 42...50 electronically

Inlet press., bar: 0,35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

bar: 250...253 pressure

Perforated plate

mm:0.5diameter

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

Prestroke

e mm: 0,3 (from BDC): +0,02(0,04)

Start of delivery block Piston stroke mm: 1,0

mm: +-0.02(0.06)

Outlet

Injection-pump setting values Test specifications in parentheses Timing-device travel:

1/min: 1100 Speed Charge press. hPa: 1000 Setting value mm: 2,5...2,9

KSB solenoid-operated valve volt: 24,0

Supply-pump pressure:

1/min: 1100 Speed Charge press. hPa: 1000 Setting value bar: 5,8...6,4

KSB solenoid-operated valve volt: 24,0

Full-load del. with charge press ::

1/min: 850 Speed Charge press. hPa: 1000

Del.quantity cm3/ 1000H.: 74,5...75,5

KSB solenoid-operated volt : 24,0 cm3/ : 4,0 valve Dispersion

1000H : (4,5)

Full-load del. w/out charge press.:

 $1/\min : 500$ Speed

Del.quantity cm3/ 1000H.: 49,5...50,5

KSB soleraid-operated volt: 24,0 valve

Low-idle speed regulation:

1/min: 400 Speed Charge press. hPa: -Del.quantity cm3/ 1000H:: 9,0...13,0

KSB solenoid-operated volt: 24,0 cm3/: 5,5 1000H.: (7,0) valve Dispersion

Full-load speed regulation:

Speed 1/min: 1330 Charge press. hPa: 1000

Del.quantity cm3/

1000H: 56,0...62,0

KSB solenoid-operated volt: 24,0 valve

Start:

1/min: 100 Speed Charge press. hPa: -

Del.quantity :- mind cm3/1000H.: 80,0	+ KSB solenoid-operated + valve volt: 24,0
KSB solenoid-operated valve volt: 24,0	T Overflow quantity at overflow valve:
Inspection-pump test specifications Test specifications in parentheses	1st speed 1/min: 500 Charge press. hPa: -
Timing-device characteristic:	+ KSB solenoid-operated + valve volt: 24,0 + Oveflow : 4183
1st speed 1/min: 400* Charge press. hPa: - TD travel mm: 3,04,0	 quantity cm3/10s: (2698) 2nd speed 1/min: 1250 Charge press. hPa: 1000 KSB solenoid-operated
mm: - KSB solenoid-operated valve volt: - 2nd speed 1/min: 850	valve volt: 24,0 Overflow : 55138 quantity cm3/10s: (40153)
Charge press. hPa: 1000 TD travel mm: 0,61,4	Delivery-quant. and breakaway char.:
mm: (0,31,7) KSB solenoid-operated valve volt: 24,0 3rd speed 1/min: 1100 Charge press. hPa: 1000 TD travel mm: 2,52,9	- 1st speed 1/min: 700* - Charge-air pressure-setting - point hPa: 500 - LDA stroke mm: 7,4 - KSB solenoid-operated - valve volt: 24,0
mm: (2,03,4) KSB solenoid-operated valve volt: 24,0 4th speed 1/min: 1250	Del.quantity cm3/: 65,066,0 1000H.: (61,569,5) 2nd speed 1/min: 1500 Charge press. hPa: 1000
Charge press. hPa: 1000 TD travel mm: 2,93,7 mm: (2,64,0)	+ KSB solenoid-operated + valve volt: 24,0 - Del.guantity cm3/: 0,03,0
KSB solenoid-operated valve volt: 24,0	Del.quantity cm3/: 0,03,0 1000H.: - 3rd speed 1/min: 1450 Charge press. hPa: 1000
Supply-pump pressure characteristic:	+ KSB solenoid-operated + valve volt: 24,0
1st speed 1/min: 500 Charge press. hPa: 1000	+ Del.quantity cm3/: 0,015,0 + 1000H.: -
Supply-pump pressure bar: 3,13,7 KSB solenoid-operated valve volt: 24,0	- Charge press. hPa: 1000 - KSB solenoid-operated - valve volt: 24,0
2nd speed 1/min: 850 Charge press. hPa: 1000 Supply-pump	Del.quantity cm3/: 15,055,0 1000H.: - 5th speed 1/min: 1330
pressure bar: 4,85,4 KSB solenoid-operated valve volt: 24,0 3rd speed 1/min: 1100	+ Charge press. hPa: 1000 + KSB solenoid-operated + valve volt: 24,0 + Del.quantity cm3/: 56,062,0
3rd speed 1/min: 1100 Charge press. hPa: 1000 Supply-pump pressure bar: 5,86,4	1000H.: (53,065,0) + 6th speed 1/min: 1250 + Charge press. hPa: 1000
KSB solenoid-operated valve volt: 24,0 4th speed 1/min: 1250	+ KSB solenoid-operated + valve volt: 24,0 + Del.quantity cm3/: 71,074,0
Charge press. hPa: 1000 Supply-pump	1000H.: (69,575,5) + 7th speed 1/min: 1100 Charge press hPa: 1000

KSB solenoid-operated volt: 24,0 cm3/: 72,5...75,5 1000H.: (70,5...77,5) valve Del.quantity 1/min: 850 8th speed Charge press. hPa: 1000 KSB solenoid-operated valve volt: 24,0
Del.quantity cm3/: 74,5...75,5
1000H: (72,0...78,0)
9th speed 1/min: 500 Charge press. hPa: -KSB solenoid-operated volt: 24,0 valve cm3/: 49,5...50,5 Del.quantity 1000H: (46,0...54,0) Zero delivery (stop): Mech. shutoff: 1/min: 1250 Speed Del.quantity cm3/: 0..3 1000H .: -Electr. shutoff: Speed 1/min: 400 ELAB volt: -Del.quantity cm3/: 0,0...3,0 1000H.: max. Idle delivery: 1/min: 400 1st speed KSB solenoid-operated volt: 24,0 valve Del.quantity cm3/: 9,0...13,0 1000H.: (6,0...16,0) 1/min: 500 2nd speed KSB solenoid-operated volt: 24,0 Del.quantity cm3/: 0,0...4,0 1000H.: -Automatic starting fuel delivery: 1st speed 1/min: 220 Charge press. hPa: -KSB solenoid-operated volt: 24,0 Del.quantity cm3/: -1000H: 80,0 ind. 1/min: 320 2nd speed Charge press. hPa: KSB solenoid-operated volt: 24,0 valve Del.quantity cm3/: -

1000H: 80,0

Shutoff electromagnet:

Cut-in

min. voltage : 20,0 Rated voltage : 24,0

Mounting and assembly dimensions:

Designation

K mm : KF mm : MS mm : 1,4...1,8
SVS max. mm : 2,7
XK mm : XL mm : -

Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

- * Correction at adjusting nut (46)
- * Unscrew KSB ball valve 2 mm

Heavy-duty fuel-injection pump for DI-engines: only test using timing-device-travel measuring device with metal jacket

max.

Note inst. in remarks column

: CUM 3,9 P14 Test sheet : 17.04.90 Edition

replaces

: ISO 4113 Calibrating oil

: VE 4/12F1250 R301-1 Injection pump

Type number : 0 460 424 045

Customer Part-No.: 3 915 288

Customer-specific information

Customer : CDC

Engine : 4 BT

k: 77 Power 1/mi: 2500 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil

with thermometer : 40...48 : 42...50 electronically

Inlet press., bar: 0,35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening |

bar: 250...253 pressure

Perforated-plate

mm : 0.5 diameter

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

Prestroke mm: 0,3 (from BDC): +0,02(0,04)

Start of delivery block Piston stroke mm: 1,0

mm: +0,02(0,06)

Outlet

Injection-pump setting values Test specifications in parentheses Timing-device travel:

1/min: 1100 Speed Charge press. hPa: 1000 Setting value mm: 2,5...2,9 KSB solenoid-operated volt: 12,0 valve

Supply-pump pressure:

1/min: 1100 Speed Charge press. hPa: 1000 Setting value bar: 5,8...6,4 KSB solenoid-operated valve volt: 12,0

Full-load del. with charge press.:

1/min: 850 Speed Charge press. hPa: 1000

Del.quantity cm3/ 1000H.: 74,5...75,5

KSB solenoid-operated volt: 12,0 valve cm3/: 4,0Dispersion 1000H : (4,5)

Full-load del. w/out charge press.:

1/min : 500 Speed Del.quantity cm3/ 1000H.: 49,5...50,5

KSB solenoid-operated volt: 12,0 valve

Low-idle speed regulation:

Speed 1/min: 400 Charge press. hPa: -Del.quantity cm3/ 1000H.: 9,0...13,0

KSB solenoid-operated volt: 12.0 cm3/: 5.5 1000H.: (7,0) valve Dispersion

Full-load speed regulation:

1/min: 1330 Speed Charge press. hPa: 1000 Del.quantity cm3/ 1000H: 56,0...62,0

KSB solenoid-operated valve volt: 12,0

Start:

1/min: 100 Speed Charge press. hPa: -

mind cm3/1000H.: 80,0	+ ksb solenota-operated + valve volt: 12,0
KSB solenoid-operated	1
valve volt: 12,0	Overflow quantity at overflow valve:
Inspection-pump test specifications	1st speed 1/min: 500
Test specifications in parentheses	+ Charge press. hPa: -
Tobe open in carrona in parameter	+ KSB solenoid-operated
Timing-device characteristic:	valve volt: 12,0
Timing device character isere.	+ Oveflow : 4183
	quantity cm3/10s: (2698)
1st speed 1/min: 400*	+ 2nd speed 1/min: 1250
	Charge press. hPa: 1000
Charge press. hPa: - TD travel mm: 3,04,0	KSB solenoid-operated
· · · · · · · · · · · · · · · · · · ·	I valve volt: 12 f
m: -	+ valve volt: 12,0 + Overflow : 55138
KSB solenoid-operated valve volt: -	quantity cm3/10s: (40153)
2nd speed 1/min: 850	T quality (10) 103: (40:::133)
Change proces have 1000	T Delivery-quant. and breakaway char.:
Charge press. hPa: 1000	Decivery quarter and breakaway enarch
TD travel mm: 0,61,4	1st speed 1/min: 700*
mm: (0,31,7)	Charge-air pressure-setting
KSB solenoid-operated	point hPa: 500
valve volt: 12,0	LDA stroke mm: 7,4
3rd speed 1/min: 1100	
Charge press. hPa: 1000	+ KSB solenoid-operated + valve volt: 12,0
TD travel mm: 2,52,9	1 Dol guartity cm ² /: 65 0 66 0
mm: (2,03,4)	Del.quantity cm3/: 65,066,0 1000H.: (61,569,5)
KSB solenoid-operated	2nd speed 1/min: 1500
valve volt: 12,0	Charge press. hPa: 1000
4th speed 1/min: 1250	KSB solenoid-operated
Charge press. hPa: 1000	Valve Volt: 12,0
TD travel mm: 2,93,7	Del.quantity cm3/: 0,03,0
mm: (2,64,0)	1000H.: -
KSB solenoid-operated	3rd speed 1/min: 1450
valve volt: 12,0	Charge press. hPa: 1000
Supply-pump pressure characteristic:	KSB solenoid-operated
Supply-build pressure maracremistre.	valve volt: 12,0
1st speed 1/min: 500	\perp pel quantity cm3/: 0.015.0
Charge press. hPa: 1000	† Del.quantity cm3/: 0,015,0 † 1000H.: -
Supply-pump	4th speed 1/min: 1400
pressure bar: 3,13,7	Charge press. hPa: 1000
KSB solenoid-operated	+ KSB solenoid-operated
valve volt: 12.0	∔ valve volt: 12,0
2nd speed 1/min: 850	+ Del.quantity cm3/: 15,055,0
Charge press. hPa: 1000	↓ 1000H.: -
Supply-pump	→ 5th speed 1/min: 1330
pressure bar: 4,85,4	+ Charge press. hPa: 1000
KSB solenoid-operated	+ KSB solenoid-operated
valve volt: 12,0	+ valve volt: 12,0
3rd speed 1/min: 1100	+ Del.quantity cm3/: 56,062,0
Charge press. hPa: 1000	1000H.: (53,065,0)
Supply-pump	+ 6th speed 1/min: 1250
pressure bar: 5,86,4	+ Charge press. hPa: 1000
KSB solenoid-operated	+ KSB solenoid-operated
valve volt: 12,0	valve volt: 12,0 Del.quantity cm3/: 71,074,0
4th speed 1/min: 1250	t Deliquantity Cm3/: (1,0/4,0
Charge press. hPa: 1000	1000H.: (69,575,5)
Supply-pump	+ 7th speed 1/min: 1100
pressure bar: 6,57,1	+ Charge press. hPa: 1000

KSB solenoid-operated volt: 12,0 valve , cm3/: 72,5...75,5 1000H.: (70,5...77,5) Del.quantity 1/min: 850 8th speed Charge press. hPa: 1000 KSB solenoid-operated volt: 12,0 cm3/: 74,5...75,5 1000H: (72,0...78,0) valve Del.quantity 1/min: 500 9th speed Charge press. hPa: -KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: 49,5...50,5 1000H: (46,0...54,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1250 Del.quantity cm3/: 0..3 1000H.: -

Electr. shutoff:

Speed 1/min: 400
ELAB volt: Del.quantity cm3/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 400
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: 9,0...13,0
1000H.: (6,0...16,0)
2nd speed 1/min: 500
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 220
Charge press. hPa: KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: ind. 1000H: 80,0
2nd speed 1/min: 320

Charge press. hPa: KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: max. 1000H: 80,0

Mounting and assembly dimensions:

Designation

K mm : KF mm : MS mm : 1,4...1,8
SVS max. mm : 2,7
XK mm : XL mm : -

Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

- * Correction at adjusting nut (46)
- * Unscrew KSB ball valve 2 mm

Note inst. in remarks column

Test sheet Edition : CUM 3,9 P11 : 17.04.90

replaces

Calibrating oil : ISO 4113

: VE 4/12F1250 R301-1 Injection pump

Type number : 0 460 424 045 Customer Part-No. : 3 915 428

Customer-specific information

Customer : CDC

: 4 BT Engine

k: 77 Power 1/mi: 2500 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 : 42...50 electronically

Inlet press., bar: 0,35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening .

bar: 250...253 pressure

Perforated plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter x Wall thickness : 2 x Length

Start of delivery

mm : 0,3Prestroke

(from BDC): +0.02(0.04)

Start of delivery block Piston stroke mm: 1,0

mm: +0,02(0,06)

Outlet : A

Injection pump setting values Test specifications in parentheses Timing-device travel:

1/min: 1100 Speed Charge press. hPa: 1000 Setting value mm: 2,5...2,9 KSB solenoid-operated

valve volt: 12,0

Supply-pump pressure:

Speed 1/min: 1100 Charge press. hPa: 1000 Setting value bar: 5,8...6,4 KSB solenoid-operated

valve volt: 12,0

Full-load del. with charge press.:

1/min: 850 Speed Charge press. hPa: 1000 Del.quantity cm3/ 1000H.: 74,5...75,5

KSB solenoid-operated volt: 12,0 valve Dispersion cm3/:4,01000H : (4,5)

Full-load del. w/out charge press.:

1/min: 500 Speed

Del.quantity cm3/

1000H.: 49,5...50,5

KSB solenoid-operated valve volt: 12,0

Low-idle speed regulation:

Speed 1/min: 400 Charge press. hPa: -Del.quantity cm3/ 1000H.: 9,0...13,0

KSB solenoid-operated volt: 12,0 cm3/: 5,5 valve Dispersion 1000H.: (7,0)

Full-load speed regulation:

1/min: 1330 Speed Charge press. hPa: 1000 Del.quantity cm3/ 1000H: 56,0...62,0

KSB solenoid-operated volt: 12,0 valve

Start:

1/min: 100 Speed Charge press. hPa: -

Del.quantity : - cm3/1000H.: 80,0	+ KSB solenoid-operated + valve volt: 12,0
KSB solenoid-operated valve volt: 12,0	Overflow quantity at overflow valve:
Inspection-pump test specifications Test specifications in parentheses	1st speed 1/min: 500 Charge press. hPa: -
Timing-device characteristic:	KSB solenoid-operated valve volt: 12,0 Oveflow : 4183
1st speed 1/min: 400* Charge press. hPa: -	quantity cm3/10s: (2698) 2nd speed 1/min: 1250 Charge press. hPa: 1000
TD travel mm: 3,04,0 mm: -	+ KSB solenoid-operated + valve volt: 12,0
KSB solenoid-operated valve volt: -	+ Overflow : 55138 + quantity cm3/10s: (40153)
2nd speed 1/min: 850 Charge press. hPa: 1000 TD travel mm: 0,61,4	Delivery-quant. and breakaway char.:
TD travel mm: 0,61,4 mm: (0,31,7) KSB solenoid-operated	+ 1st speed 1/min: 700* + Charge-air pressure-setting
valve volt: 12.0 3rd speed 1/min: 1100	+ point hPa: 500 + LDA stroke mm: 7,4 + KSB solenoid-operated
Charge press. hPa: 1000 TD travel mm: 2,52,9 mm: (2,03,4)	+ valve volt: 12,0
KSB solenoid-operated valve volt: 12,0	Del.quantity cm3/: 65,066,0 1000H.: (61,569,5) 2nd speed 1/min: 1500
4th speed 1/min: 1250 Charge press. hPa: 1000	+ Charge press. hPa: 1000 + KSB solenoid-operated + valve volt: 12,0
TD travel mm: 2,93,7 mm: (2,64,0) KSB solenoid-operated	+ Del.quantity cm3/: 0,03,0 + 1000H.: -
valve volt: 12,0	+ 3rd speed 1/min: 1450 + Charge press. hPa: 1000
Supply-pump pressure characteristic:	+ KSB solenoid-operated + valve volt: 12,0 + Del.quantity cm3/: 0,015,0
1st speed 1/min: 500 Charge press. hPa: 1000 Supply-pump	1000H.: - 4th speed 1/min: 1400
pressure bar: 3,13,7 KSB solenoid-operated	+ Charge press. hPa: 1000 + KSB solenoid-operated
valve volt: 12,0 2nd speed 1/min: 850 Charge press. hPa: 1000	+ valve volt: 12,0 + Del.quantity cm3/: 15,055,0 + 1000H.: -
Charge press. hPa: 1000 Supply-pump pressure bar: 4,85,4	5th speed 1/min: 1330 Charge press. hPa: 1000
KSB solenoid-operated valve volt: 12,0	KSB solenoid-operated valve volt: 12,0
3rd speed 1/min: 1100 Charge press. hPa: 1000	+ Del.quantity cm3/: 56,062,0 + 1000H.: (53,065,0) + 6th speed 1/min: 1250
Supply-pump pressure bar: 5,86,4 KSB solenoid-operated	Charge press. hPa: 1000 KSB solenoid-operated
valve volt: 12,0 4th speed 1/min: 1250	+ valve volt: 12,0 - Del.quantity cm3/: 71,074,0 1000H.: (69,575,5)
Charge press. hPa: 1000 Supply-pump pressure bar: 6,57,1	7th speed 1/min: 1100 + Charge press. hPa: 1000
pressure bar: 6,5/,1	I charge press. In a rubu

KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: 72,5...75,5 1000H.: (70,5...77,5) 1/min: 850 8th speed Charge press. hPa: 1000 KSB solenoid-operated valve volt: 12,0
Del.quantity cm3/: 74,5...75,5
1000H: (72,0...78,0)
9th speed 1/min: 500 Charge press. hPa: -KSB solenoid-operated volt: 12,0 Del.quantity cm3/: 49,5...50,5 1000H: (46,0...54,0) Zero delivery (stop): Mech. shutoff: 1/min: 1250 Speed Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: 1/min: 400 Speed ELAB volt: -Del.quantity cm3/: 0,0...3,0 1000H.: -Idle delivery: 1/min: 400 1st speed KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 9.0...13.0 1000H.: (6.0...16.0) 1/min: 500 2nd speed KSB solenoid-operated volt: 12,0 valve Del.quantity cm3/: 0,0...4,0 1000H .: -Automatic starting fuel delivery: 1/min: 220 1st speed Charge press. hPa: -KSB solenoid-operated volt: 12,0 valve Del.quantity cm3/: -1000H: 80,0 1/min: 320 2nd speed Charge press. hPa: -KSB solenoid-operated volt: 12,0 valve Del.quantity cm3/: -1000H: 80,0 max.

Mounting and assembly dimensions:

Designation

K mm : KF mm : MS mm : 1,4...1,8
SVS max. mm : 2,7
XK mm : -

Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

- * Correction at adjusting nut (46)
- * Unscrew KSB ball valve 2 mm

Note inst. in remarks column

Test sheet : CUM 3,9 P16 : 23.04.90 Edition

replaces

Calibrating oil : ISO 4113

: VE 4/12F1250 R359-1 Injection pump

: 0 460 424 055 Type number

Customer-specific information

: CDC Customer

Engine : 4 BT

k: 77 Power 1/mi: 2500 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer: 40...48 : 42...50 electronically

Inlet press., bar: 0,35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening |

bar: 250...253 pressure

Perforated-plate

mm : 0.5diameter

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm : 840

Start of delivery Prestroke mm: -(from BDC): -

Start of delivery block Piston stroke mm: 1,0

mm: +-0.02(0.06)

Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1100 Charge press. hPa: 1000 Setting value nm: 1,9...2,3

KSB solenoid-operated volt: 12.0 valve

Supply-pump pressure:

Speed 1/min: 1100 Charge press. hPa: 1000 Setting value bar: 5,4...6,0 KSB solenoid-operated

volt: 12.0

Full-load del. with charge press.:

1/min: 850 Charge press. hPa: 1000 Del.quantity cm3/ 1000H.: 73,0...74,0

KSB solenoid-operated volt: 12,0 valve cm3/: 4,0 Dispersion 1000H : (4,5)

Full-load del. w/out charge press.:

 $1/\min : 500$ Speed Del.quantity cm3/ 1000H.: 43,5...44,5

KSB solenoid-operated volt: 12.0 valve

Low-idle speed regulation:

Speed 1/min: 350 Charge press. hPa: -Del.quantity cm3/ 1000H.: 7,5...11,5

KSB solenoid-operated volt: 12,0 cm3/: 5,5 valve Dispersion 1000H.: (7,0)

Full-load speed regulation:

1/min: 1340 Charge press. hPa: 1000

Del.quantity cm3/ 1000H: 54,0...60,0

KSB solenoid-operated volt: 12,0 valve

Start:

Speed 1/min: 100 Del.quantity mind cm3/1000H.: 90,0

Inspection-pump test specifications	+	1st speed 1/min: 500
Test specifications in parentheses	+	Charge press. hPa: -
	+	KSB solenoid-operated
Timing-device characteristic:	+	valve volt: 12,0
	+	Oveflow : 4183
	+	quantity cm3/10s: (2698)
1st speed 1/min: 400	1	2nd speed 1/min: 1250
Charge press. hPa: -	1	Charge press. hPa: 1000
TD travel mm: 2,73,7	1	KSB solenoid-operated
mm: -	Ι	valve volt: 12,0
	I	Overflow : 55138
KSB solenoid-operated valve volt: -	T	quantity cm3/10s: 40153)
	T	qualities that ites. 401557
2nd speed 1/min: 900	T	Datistany and broaks are than .
Charge press. hPa: 1000	T	Delivery-quant. and breakaway char.:
TD travel mm: 0,71,5	+	1-1 1/min 700+
mm: (0,41,8)	†	1st speed 1/min: 700*
KSB solenoid-operated	+	Charge-air pressure-setting
valve volt: 12,0	+	point hPa: 550
3rd speed 1/min: 1100	+	LDA stroke mm: 6,4
Charge press. hPa: 1000	+	KSB solenoid-operated
TD travel mm: 1,92,3	+	valve volt: 12,0
mm: (1,42,8)	+	Del.quantity cm3/: 64,565,5
KSB solenoid-operated	+	1000H.: (61,069,0)
valve volt: 12,0	+	2nd speed 1/min: 1500
4th speed 1/min: 1250	+	Charge press. hPa: 1000
Charge press. hPa: 1000	+	KSB solenoid-operated
TD travel mm: 2,93,7	1	valve volt: 12,0
mm: (2,64,0)	1	Deliguantity cm3/: 0.03.0
KSB solenoid-operated	1	Del.quantity cm3/: 0,03,0 1000H.: -
valve volt: 12,0	1	3rd speed 1/min: 1460
Vacve Voce: 1270	1	Charge press. hPa: 1000
Supply-pump pressure characteristic:	1	KSB solenoid-operated
supply pump pressure that accerts tit.	1	valve volt: 12,0
1st speed 1/min: 500	Ι	Del quantity cm3/: 0.0 15.0
Change manner than 1000	T	Del.quantity cm3/: 0,015,0 1000H.: -
Charge press. hPa: 1000	T	4th speed 1/min: 1400
Supply-pump	Ť	Change proper block 1000
pressure bar: 2,73,3	T	Charge press. hPa: 1000
KSB solenoid-operated	†	KSB solenoid operated
valve volt: 12,0	†	valve volt: 12,0
2nd speed 1/min: 900	†	Del.quantity_cm3/: 15,055,0
Charge press. hPa: 1000	+	1000H.: -
Supply-pump	+	5th speed
pressure bar: 4,45,0	+	Charge press. hPa: 1000
KSB solenoid-operated	+	KSB solenoid-operated
valve volt: 12,0	+	valve volt: 12,0
3rd speed 1/min: 1100	+	Del.quantity cm3/: 54,060,0
Charge press. hPa: 1000	+	1000H.: (51,063,0)
Supply-pump	+	6th speed 1/min: 1250
pressure bar: 5,46,0	+	Charge press. hPa: 1000
KSB solenoid-operated	+	KSB solenoid-operated
valve volt: 12,0	+	valve volt: 12,0
4th speed 1/min: 1250	+	Del.quantity cm3/: 68.571.5
Charge press. hPa: 1000	1	Del.quantity cm3/: 68,571,5 1000H.: (67,073,0)
Supply-pump	1	7th speed 1/min: 850
pressure bar: 6,06,6	1	Charge press. hPa: 1000
KSB solenoid-operated	1	KSB solenoid-operated
	Ţ	valve volt: 12,0
valve volt: 12,0	1	Del.quantity cm3/: 73,074,0
Quantity at avantias value.	Ι	1000H.: (70,576,5)
Overflow quantity at overflow valve:	T	
	T	8th speed 1/min: 700

Charge press. hPa: 550 KSB solenoid-operated volt: 12,0 valve

cm3/: 64/5...65/5 1000H: (61/0...69/0) 1/min: 500 Del.quantity

9th speed Charge press. hPa: KSB solenoid-operated

valve volt: 12,0 Del.quantity cm3/: 43,5...44,5

1000H: (40,0...48,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1250 Del.quantity cm3/: 0..3 1000H.: -

Electr. shutoff:

1/min: 350 Speed volt: -ELAB

Del.quantity cm3/: 0,0...3,0 max. 1000H.: -

Idle delivery:

1/min: 350 1st speed KSB solenoid-operated

volt: 12,0 valve

, cm3/: 7,5...11,5 1000H.: (4,5...14,5) Del.quantity

1/min: 400 2nd speed KSB solenoid-operated volt: 12,0 valve

Del.quantity cm3/: 0,0...6,0 1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 150 KSB solenoid-operated

volt: 12,0 Del.quantity cm3/: -

1000H: 80,0 ind.

1/min: 280 2nd speed KSB solenoid-operated

volt: 12,0 valve Del.quantity cm3/: -

1000H: 80,0

Shutoff electromagnet:

Cut-in

min. voltage : 10,0 Rated voltage : 12,0 Mounting and assembly dimensions:

Designation

: 3,7 K mm KF : K-0T mm MS mm SVS max. mm

: 1,3...1,7 : 2,7 : 21,8...23,8 XK пm XL mm

Remarks:

: C.D.C. # 391 7530 # 391 1242 : C.D.C.

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut (46)

* Unscrew KSB ball valve 2 mm

Note inst. in remarks column

: CUM 3,9 P17 : 23.04.90 Test sheet Edition

replaces

Calibrating oil : ISO 4113

Injection pump : VE 4/12F1250 R359-1 Type number : 0 460 424 055 Customer Part-No. : 3 917 531

Customer-specific information

Customer : CDC

: 4 BT Engine

k: 77 Power 1/mi: 2500 Speed

TEST BENCH REQUIREMENTS

Calibrating oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

bar: 250...253 pressure

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery mm : -Prestroke (from BDC): -

Start of delivery block Piston stroke mm: 1,0

mm: +0,02(0,06)

Outlet

Injection-pump setting values Test specifications in parentheses Timing-device travel:

1/min: 1100 Charge press. hPa: 1000 Setting value mm: 1,9...2,3

KSB solenoid-operated volt: 12,0 valve

Supply-pump pressure:

1/min: 1100 Speed Charge press. hPa: 1000 Setting value bar: 5,4...6,0

KSB solenoid-operated valve volt: 12,0

Full-load del. with charge press.:

1/min: 850 Speed Charge press. hPa: 1000 Del.quantity cm3/ 1000H.: 73,0...74,0

KSB solenoid-operated volt : 12,0 valve cm3/:4,0Dispersion 1000H : (4,5)

Full-load del. w/out charge press.:

1/min : 500 Speed

Del.quantity cm3/ 1000H.: 43,5...44,5

KSB solenoid-operated valve volt: 12,0

Low-idle speed regulation:

Speed 1/min: 350 Charge press. hPa: -

Del.quantity cm3/ 1000H.: 7,5...11,5

KSB solenoid-operated Volt: 12,0 cm3/: 5,5 1000H.: (7,0) valve Dispersion

Full-load speed regulation:

1/min: 1340 Speed Charge press. hPa: 1000 Del.quantity cm3/ 1000H: 54,0...60,0

KSB solenoid-operated volt: 12,0 valve

Start:

1/min: 100 Speed Del.quantity cm3/1000H.: 90.0

valve volt: 12,0	Overflow quantity at overflow valve:
Inspection—pump test specifications Test specifications in parentheses	- 1st speed 1/min: 500 - Charge press. hPa: - - KSB solenoid-operated
Timing-device characteristic:	- valve volt: 12,0 - Oveflow : 4183 - quantity cm3/10s: (2698)
1st speed 1/min: 400 Charge press. hPa: -	2nd speed 1/min: 1250 Charge press. hPa: 1000
TD travel mm: 2,73,7	+ KSB solenoid-operated + valve volt: 12,0
KSB solenoid-operated valve volt: -	Overflow : 55138 quantity cm3/10s: 40153)
2nd speed 1/min: 900 Charge press. hPa: 1000 TD travel mm: 0,71,5	Delivery-quant. and breakaway char.:
mm: (0,41,8) KSB solenoid—operated	1st speed 1/min: 700* Charge-air pressure-setting
valve volt: 12,0 3rd speed 1/min: 1100	point hPa: 550 LDA stroke mm: 6,4
Charge press. hPa: 1000 TD travel mm: 1,92,3 mm: (1,42,8)	+ KSB solenoid-operated + valve volt: 12,0 - Del.quantity cm3/: 64.565.5
KSB solenoid-operated valve volt: 12,0	Del.quantity cm3/: 64,565,5 1000H.: (61,069,0) 2nd speed 1/min: 1500
4th speed 1/min: 1250 Charge press. hPa: 1000	Charge press. hPa: 1000 KSB solenoid-operated
TD travel mm: 2,93,7 mm: (2,64,0) KSB solenoid-operated	- valve volt: 12,0 - Del.quantity cm3/: 0,03,0 - 1000H.: -
valve volt: 12,0	3rd speed 1/min: 1460 Charge press. hPa: 1000
Supply-pump pressure characteristic:	+ KSB solenoid-operated + valve volt: 12,0
1st speed 1/min: 500 Charge press. hPa: 1000 Supply-pump	Del.quantity cm3/: 0,015,0 1000H.: - 4th speed 1/min: 1400
pressure bar: 2,73,3 KSB solenoid—operated	+ Charge press. hPa: 1000 + KSB solenoid-operated
valve volt: 12,0 2nd speed 1/min: 900 Change proces hPa: 1000	- valve volt: 12,0 - Del.quantity cm3/: 15,055,0 - 1000H.: -
Charge press. hPa: 1000 Supply-pump pressure bar: 4,45,0	+ 5th speed 1/min: 1340 + Charge press. hPa: 1000
KSB solenoid-operated valve volt: 12,0	+ KSB solenoid-operated + valve volt: 12,0
3rd speed 1/min: 1100 Charge press. hPa: 1000 Supply-pump	Del.quantity cm3/: 54,060,0 1000H.: (51,063,0) 6th speed 1/min: 1250
pressure bar: 5,46,0 KSB solenoid-operated	+ Charge press. hPa: 1000 + KSB solenoid-operated
valve volt: 12,0 4th speed 1/min: 1250	+ valve volt: 12,0 + Del.quantity cm3/: 68,571,5 + 1000H.: (67,073,0)
Charge press. hPa: 1000 Supply-pump pressure bar: 6,06,6	7th speed 1/min: 850 Charge press. hPa: 1000
KSB solenoid-operated valve volt: 12.0	KSB solenoid-operated valve volt: 12,0

Del.quantity cm3/: 73,0...74,0 1000H.: (70,5...76,5) 1/min: 700 8th speed Charge press. hPa: 550 KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: 64,5...65,5 1000H: (61,0...69,0) 1/min: 500 9th speed Charge press. hPa: -KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: 43,5...44,5 1000H: (40,0...48,0) Zero delivery (stop): Mech. shutoff: Speed 1/min: 1250 Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: 1/min: 350 Speed ELAB volt: -Del.quantity cm3/: 0,0...3,0 -1000H .: max. Idle delivery: 1st speed 1/min: 350 KSB solenoid-operated volt: 12,0 cm3/: 7,5...11,5 1000H:: (4,5...14,5) valve Del.quantity 2nd speed 1/min: 400 KSB solenoid-operated volt: 12,0 valve Del.quantity cm3/: 0,0...6,0 1000H .: -Automatic starting fuel delivery: 1st speed 1/min: 150 KSB solenoid-operated volt: 12,0 valve cm3/: -Del.quantity 1000H: 80,0 ind. 1/min: 280 2nd speed KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: -1000H: 80,0 Shutoff electromagnet:

Cut-in min. voltage : 20,0 Rated voltage : 24,0

Mounting and assembly dimensions:

Designation : 3,7 mm Κ : K-OT : 1,3...1,7 KF mm MS mm : 2,7 : 21,8...23,8 SVS max. mm XK mm XL mm : 11,7...15,1

Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

- * Correction at adjusting nut (46)
- * Unscrew KSB ball valve 2 mm

Note inst. in remarks column

: CUM 3,9 P18 Test sheet Edition : 23.04.90

replaces

Calibrating oil : ISO 4113

: VE 4/12F1250 R359-1 Injection pump

Type number : 0 460 424 055 Customer Part-No. : 3 917 532

Customer-specific information

: CDC Customer

Engine : 4 BT

Power k: 77 1/mi: 2500 Speed

TEST BENCH REQUIREMENTS

Calibrating oil return temp. °C

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

bar: 250...253 pressure

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm : 840

Start of delivery Prestroke mm : --(from BDC): -

Start of delivery block Piston stroke mm: 1,0

mm: +-0.02(0.06)

: A Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1100 Charge press. hPa: 1000 Setting value mm: 1,9...2,3 KSB solenoid-operated

volt: 12,0

Supply-pump pressure:

Speed 1/min: 1100 Charge press. hPa: 1000 Setting value bar: 5,4...6,0 KSB solenoid-operated

valve volt: 12,0

Full-load del. with charge press.:

1/min: 850 Speed Charge press. hPa: 1000 Del.quantity cm3/ 1000H.: 73,0...74,0

KSB solenoid-operated volt: 12,0 valve cm3/:4.0Dispersion 1000H: (4,5)

Full-load del. w/out charge press.:

1/min : 500 Speed Del.quantity cm3/ 1000H.: 43,5...44,5

KSB solenoid-operated volt: 12,0 valve

Low-idle speed regulation:

Speed 1/min: 350 Charge press. hPa: -Del.quantity cm3/ 1000H.: 7,5...11,5

KSB solenoid-operated volt: 12,0 cm3/: 5,5 1000H.: (7,0) valve Dispersion

Full-load speed regulation:

1/min: 1340 Speed Charge press. hPa: 1000 Del.quantity cm3/ 1000H: 54,0...60,0

KSB solenoid-operated volt: 12,0 valve

Start:

1/min: 100 Speed Del.quantity cm3/1000H.: 90,0 mind

valve volt: 12,0	Overflow quantity at overflow valve:
Inspection pump test specifications - Test specifications in parentheses -	1st speed 1/min: 500 Charge press. hPa: -
Timing-device characteristic:	KSB solenoid-operated valve volt: 12,0 Oveflow : 4183
1st speed 1/min: 400 Charge press. hPa: -	quantity cm3/10s: (2698) 2nd speed 1/min: 1250 Charge press. hPa: 1000
TD travel mm: 2,73,7 mm: -	+ KSB solenoid-operated + valve volt: 12,0
KSB solenoid-operated	Overflow : 55138 quantity cm3/10s: 40153)
2nd speed 1/min: 900 - Charge press. hPa: 1000 -	
TD travel mm: 0,71,5 mm: (0,41,8)	1st speed 1/min: 700*
KSB solenoid-operated -	Charge-air pressure-setting point hPa: 550
valve volt: 12,0 3rd speed 1/min: 1100	LDA stroke mm: 6,4
Charge press. hPa: 1000 TD travel mm: 1,92,3	KSB solenoid-operated valve volt: 12,0
KSB solenoid operated -	Del.quantity cm3/: 64,565,5 1000H.: (61,069,0)
valve volt: 12,0 - 4th speed 1/min: 1250 -	2nd speed 1/min: 1500 Charge press. hPa: 1000
Charge press. hPa: 1000 - TD travel mm: 2,93,7	KSB solenoid-operated valve volt: 12,0
mm: (2,64,0) - KSB solenoid-operated -	Del.quantity cm3/: 0,03,0
valve volt: 12,0	- 3rd speed 1/min: 1460 Charge press. hPa: 1000
Supply-pump pressure characteristic:	KSB solenoid-operated valve volt: 12,0
1st speed 1/min: 500	Del.quantity cm3/: 0,015,0
Charge press. hPa: 1000	4th speed
pressure bar: 2,73,3	Charge press. hPa: 1000 KSB solenoid-operated
valve volt: 12,0 - 2nd speed 1/min: 900 -	valve volt: 12,0 Del.quantity cm3/: 15,055,0
Charge press. hPa: 1000 Supply-pump	1000H.: - 5th speed 1/min: 1340
pressure bar: 4,45,0 - KSB solenoid-operated	Charge press. hPa: 1000 KSB solenoid-operated
valve volt: 12,0 - 3rd speed 1/min: 1100 -	valve volt: 12,0 Del.quantity cm3/: 54,060,0
Charge press. hPa: 1000 - Supply-pump -	1000H.: (51.063,0) 6th speed 1/min: 1250
pressure bar: 5,46,0	Charge press. hPa: 1000
KSB solenoid-operated	KSB solenoid-operated valve volt: 12,0
4th speed 1/min: 1250 - Charge press. hPa: 1000 -	Del.quantity cm3/: 68,571,5 1000H.: (67,073,0)
Supply-pump pressure bar: 6,06,6	7th speed 1/min: 850 Charge press. hPa: 1000
KSB solenoid-operated - valve volt: 12,0 -	F KSB solenoid-operated F valve volt: 12,0
J24	

Del.quantity cm3/: 73,0...74,0 1000H.: (70,5...76,5) 8th speed 1/min: 700 Charge press. hPa: 550 KSB solenoid-operated volt: 12,0 valve Del.quantity cm3/: 64,5...65,5 1000H: (61,0...69,0) 1/min: 500 9th speed Charge press. hPa: -KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: 43,5...44,5 1000H: (40,0...48,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1250 Del.quantity cm3/: 0..3 1000H.: -

Electr. shutoff:

1/min: 350 Speed ELAB volt: -Del.quantity cm3/: 0,0...3,0 max. 1000H.: -

Idle delivery:

1/min: 350 1st speed KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 7,5...11,5 1000H.: (4,5...14,5) 1/min: 400 2nd speed KSB solenoid-operated volt: 12,0 valve Del.quantity cm3/: 0,0...6,0 1000H.: -

Automatic starting fuel delivery:

1/min: 150 1st speed KSB solenoid-operated volt: 12,0 Del.quantity cm3/: -1000H: 80,0 ind.

2nd speed 1/min: 280 KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: -1000H: 80,0 max.

Shutoff electromagnet:

Cut-in : 10,0 min. voltage

Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm KF : K-0T : 1,3...1,7 MS mm : 2,7 : 21,8...23,8 : 11,7...15,1 SVS max. mm XΚ mm XL mm

Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut (46)

* Unscrew KSB ball valve 2 mm

Note inst. in remarks column

: CUM 3,9 P19 Test sheet : 23.04.90 Edition

replaces

Calibrating oil : ISO 4113

: VE 4/12F1250 R359-1 Injection pump

: 0 460 424 055 Type number Customer Part-No.: 3 917 533

Customer-specific information

: CDC Customer

: 4 BT Engine

k: 77 Power 1/mi: 2500 Speed

TEST BENCH REQUIREMENTS

Calibrating oil return temp.

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

bar: 250...253 pressure

Perforated-plate

mm: 0.5 diameter

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Lenath

Start of delivery Prestroke mm: -(from BDC): -

Start of delivery block Piston stroke mm: 1,0

mm: +0.02(0.06)

Outlet.

Injection-pump setting values Test specifications in parentheses Timing-device travel:

Speed 1/min: 1100 Charge press. hPa: 1000 Setting value mm: 1,9...2,3

KSB solenoid-operated volt: 24,0 valve

Supply-pump pressure:

1/min: 1100 Speed Charge press. hPa: 1000 Setting value bar: 5,4...6,0

KSB solenoid-operated valve volt: 24,0

Full-load del. with charge press.:

1/min: 850 Speed Charge press. hPa: 1000

Del.quantity cm3/ 1000H.: 73,0...74,0

KSB solenoid-operated volt : 24,0 cm3/ : 4,0 valve Dispersion

1000H : (4,5)

Full-load del. w/out charge press .:

1/min: 500 Speed Del.quantity cm3/ 1000H.: 43,5...44,5

KSB solenoid-operated volt: 24,0 valve

Low-idle speed regulation:

1/min: 350 Speed Charge press. hPa: -Del.quantity cm3/ 1000H.: 7,5...11,5

KSB solenoid-operated volt: 24,0 cm3/: 5,5 1000H.: (7,0) valve Dispersion

Full-load speed regulation:

Speed 1/min: 1340 Charge press. hPa: 1000 Del.quantity cm3/ 1000H: 54,0...60,0

KSB solenoid-operated volt: 24,0 valve

Start:

1/min: 100 Speed Del.quantity cm3/1000H.: 90,0 mind

and the second s	ì
KSB solenoid-operated	†
valve volt: 24,0	Overflow quantity at overflow valve
	1
Innection number tost consifications	+ 1st speed 1/min: 500
Inspection pump test specifications	T 15t speed 1/mill. 200
Test specifications in parentheses	+ Charge press. hPa: -
	+ KSB solenoid-operated
Timing-device characteristic:	+ valve volt: 24,0
Thirting device character istre.	+ Oveflow : 4183
	+ 0vertow . 4103
	+ quantity cm3/10s: (2698)
1st speed 1/min: 400	+ 2nd speed 1/min: 1250
Charge press. hPa: -	- Charge press. hPa: 1000
that ye piess. IIra.	You and annotated
TD travel mm: 2,73,7	+ KSB solenoid-operated
mm: -	+ valve volt: 24,0
KSB solenoid-operated	+ Overflow : 55138
	+ quantity cm3/10s: 40153)
valve volt: -	qualities distribs. 401557
2nd speed 1/min: 900	+
Charge press. hPa: 1000	+ Delivery-quant. and breakaway char.
To +rayel mm: 0.7 1.5	
TD travel mm: 0,71,5	1 1 1 1 1 / 7004
1111. (0,41,0)	+ 1st speed 1/min: 700*
KSB solenoid-operated	+ Charge-air pressure-setting
valve volt: 24,0	+ point hPa: 550
3rd speed 1/min: 1100	+ LDA stroke mm: 6,4
Charge press. hPa: 1000	+ KSB solenoid-operated
TD travel mm: 1,92,3	+ valve volt: 24,0
mm: (1,42,8)	+ Del.quantity cm3/: 64,565,5
	100011 . (41 0 40 0)
KSB solenoid-operated	1000H.: (61,069,0)
valve volt: 24,0	+ 2nd speed 1/min: 1500
4th speed 1/min: 1250	+ Charge press. hPa: 1000
	+ KSB solenoid-operated
Charge press. hPa: 1000	
TD travel mm: 2,93,7	+ valve volt: 24,0
mm: (2,64,0)	Del.quantity cm3/: 0,03,0 + 1000H.: -
KSB solenoid-operated	1000H -
value valte 2/ 0	+ 3rd speed 1/min: 1460
valve volt: 24,0	7 314 speed 1/1111. 1400
	+ Charge press. hPa: 1000
Supply-pump pressure characteristic:	+ KSB solenoid-operated
cappe, bank by coons a strat as to the	+ valve volt: 24,0
4 1	7 Valve volt. 2470
1st speed 1/min: 500	+ Del.quantity cm3/: 0,015,0 + 1000H.: -
Charge press. hPa: 1000	+ 1000H.: -
Supply-pump	+ 4th speed 1/min: 1400
processing hans 2.7. 3.7	+ Charge press. hPa: 1000
pressure bar: 2,73,3	
KSB solenoid-operated	+ KSB solenoid-operated
valve volt: 24,0	+ valve volt: 24,0
2nd speed 1/min: 900	+ Del.quantity cm3/: 15,055,0
Change appear hos 1000	1000H.: -
Charge press. hPa: 1000	
Supply-pump	+ 5th speed 1/min: 1340
pressure bar: 4,45,0	+ Charge press. hPa: 1000
KSB solenoid-operated	+ KSB solenoid-operated
valve volt: 24,0	+ valve volt: 24,0
3rd speed 1/min: 1100	+ Del.quantity cm3/: 54,060,0
Charge press. hPa: 1000	1000H.: (51,063,0)
	+ 6th speed 1/min: 1250
Supply-pump	
pressure bar: 5,46,0	+ Charge press. hPa: 1000
KSB solenoid-operated	+ KSB solenoid-operated
valve volt: 24,0	+ valve volt: 24,0
/+h amond 1/mins 1000	1 No. 1 months of 71 5
4th speed 1/min: 1250	+ Del.quantity cm3/: 68,571,5
Charge press. hPa: 1000	1000H.: (67,073,0)
Supply-pump	+ 7th speed 1/min: 850
	+ Charge press. hPa: 1000
pressure bar: 6,06,6	
KSB solenoid-operated	+ KSB solenoid-operated
valve voite 24.0	1 valve volt. 24.0

Del.quantity cm3/: 73,0...74,0 1000H.: (70,5...76,5) 8th speed 1/min: 700 Charge press. hPa: 550 KSB solenoid-operated valve volt: 24,0 Del.quantity cm3/: 64,5...65,5 1000H: (61,0...69,0) 9th speed 1/min: 500 Charge press. hPa: -KSB solenoid-operated valve volt: 24,0 Del.quantity cm3/: 43,5...44,5 1000H: (40,0...48,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1250 Del.quantity cm3/: 0..3 1000H.: -

Electr. shutoff:

Speed 1/min: 350
ELAB volt: Del.quantity cm3/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 350
KSB solenoid-operated
valve volt: 24,0
Del.quantity cm3/: 7,5...11,5
1000H.: (4,5...14,5)
2nd speed 1/min: 400
KSB solenoid-operated
valve volt: 24,0
Del.quantity cm3/: 0,0...6,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 150 KSB solenoid-operated valve volt: 24,0 Del.quantity cm3/: ind. 1000H: 80,0

2nd speed 1/min: 280 KSB solenoid-operated valve volt: 24,0 Del.quantity cm3/: max. 1000H: 80,0

Shutoff electromagnet:

Cut-in

min. voltage : 10,0 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

: 3,7 K mm : K-OT : 1,3...1,7 KF mm MS mm : 2,7 : 21,8...23,8 SVS max. mm XK mm : 11,7...15,1 XL mm

Remarks:

Operate control lever after each manifold—pressure compensator pressure change.

- * Correction at adjusting nut (46)
- * Unscrew KSB ball valve 2 mm

Note inst. in remarks column

: CUM 3,9 P2 : 27.3.90 Test sheet Edition

replaces

Calibrating oil : ISO 4113

Injection pump : VE 4/12F1100 R378-4 Customer Part-No. : 3 917 033

Customer-specific information

Customer

: 4 BT 3.9 IND. Engine

k: 59 Power 1/mi: 2200 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil

with thermometer : 40...48

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening

pressure bar: 250...253

Perforated plate

diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

Prestroke mm: 0,3 (from BDC): +0,02(0,04)

Start of delivery block Piston stroke mm: 1,8

mm: +0.02(0.06)

Outlet.

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 900 Speed Setting value mm: 2,3...2,7

Supply-pump pressure:

1/min: 900 Speed Setting value bar: 4,1...4,7

Full-load del. w/out charge press.:

1/min: 900 Speed

Del.quantity cm3/ 1000H.: 58,5...59,5 Dispersion cm3/: 4,0

1000H.: (4,5)

Low-idle speed regulation:

1/min: 375 Speed

Del.quantity cm3/ 1000<u>H</u>.: 8,0...14,0

cm3/: 5,5 1000H.: 7,0 Dispersion

Full-load speed regulation:

1/min: 1140

Del.quantity cm3/

1000H: 45,0...51,0

Start:

Speed 1/min: 110 Del.quantity

cm3/1000H.: 50,0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 750 1st speed

mm: 1,3...2,1 mm: 1,0...2,4 TD travel

1/min: 900

2nd speed

mm: 2,3...2,7 mm: 1,8...2,2 TD travel

1/min: 1100 3rd speed

mm: 3,1...3,9 mm: 2,8...4,2 TD travel

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

pressure

bar: 2,3...2,9 bar: 2,1...3,1

1/min: 900 2nd speed

Supply-pump bar: 4,1...4,7 bar: 3,9...4,9 pressure 1/min: 1100 3rd speed Supply-pump bar: 4,9...5,5 bar: 4,7...5,7 pressure Overflow quantity at overflow valve: 1st speed 1/min: 500 : 15...30 Oveflow cm3/10s: quantity 1/min: 1100 2nd speed : 20...50 Overflow quantity cm3/10s: -Delivery-guant. and breakaway char.: 1/min: 1210 1st speed cm3/: 0,00...15,0 Del.quantity 1000H.: -1/min: 1170 2nd speed Del.quantity cm3/: 15,0...55,0 1000H.: -1/min: 1140 3rd speed Del.quantity cm3/: 45,0...51,0 1000H.: 42,0...54,0 1/min: 1100 4th speed Del.quantity cm3/: 58,0...61,0 1000H.: 56,5...62,5 5th speed 1/min: 900 Del.quantity cm3/: 58,5...59,5 Del.quantity cm3/: 30/3...62/0 1000H.: 56/0...62/0 1/min: 750 6th speed Del.quantity cm3/: 57,5...61,5 1000H.: 55,5...63,5 7th speed 1/min: 500 Del.quantity cm3/: 50,0...58,0 1000H.: 48,0...60,0 Zero delivery (stop): Mech. shutoff: 1/min: 1100 Speed Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: 1/min: 375 Speed Del.quantity cm3/: 0,0...3,0 max. 1000H.: -Idle delivery: 1/min: 375 1st speed Del.quantity cm3/: 8,0...14,0 1000H.: (6,0...16,0)

2nd speed 1/min: 500 Del.quantity cm3/: 0,0...4,0 1000H.: (-)

Automatic starting fuel delivery:

1st speed 1/min: 130 Del.quantity cm3/: ind. 1000H: 80,0

2nd speed 1/min: 240 Del.quantity cm3/: - max. 1000H: 80,0

Shutoff electromagnet:

Cut-in

min. voltage : 20,0 Rated voltage : 24,0

Mounting and assembly dimensions:

Designation

K mm : KF mm : 5,0...5,4
MS mm : 1,1...1,5
SVS max. mm : 3,5
XK mm : XL mm : -

Remarks:

Note inst. in remarks column

Test sheet : CUM 3,9 P4 Edition : 28.3.90

replaces : -

Calibrating oil : ISO 4113

Injection pump : VE 4/12F1150 R374-1

Type number : 0 460 424 063

Customer-specific information

Customer : CDC

Engine : 4 BTA 3,9 IND

Power k: 112 Speed 1/mi: 2300

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening

pressure bar : 250...253

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm : 840

Start of delivery

Prestroke mm: 0,3

(from BDC): -+0.02(0.04)

Start of delivery block Piston stroke mm: 1,55

mm: -+0.02(0.06)

Outlet : A

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 850 Charge press. hPa: 1000 Setting value mm: 4,0...4,4

Supply-pump pressure:

Speed 1/min: 850 Charge press. hPa: 1000 Setting value bar: 5,6...6,2

Full-load del. with charge press.:

Speed 1/min: 850 Charge press. hPa: 1000

Del.quantity cm3/

1000н.: 8,1...9,1

Dispersion cm3/: 4,0 1000H: 4,5

Full-load del. w/out charge press.:

Speed 1/min: 500

Del.quantity cm3/ 1000H.: 59,0...69,0

Low-idle speed regulation:

Speed 1/min: 375 Charge press. hPa: -Del.quantity cm3/

1000H.: 8,0...14,0

Dispersion cm3/: 5/5 1000H.: 7/0

Full-load speed regulation:

Speed 1/min: 1220 Charge press. hPa: 1000

Del.quantity cm3/ 1000H: 62,5...68,5

Start:

Speed 1/min: 100 Charge press. hPa: -Del.quantity : mind cm3/1000H.: 100,0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500 Charge press. hPa: 1000

TD travel mm: 1,8...2,6 mm: (1,5...2,9)

2nd speed 1/min: 850

Charge press. hPa: TD travel mm:	1000 4,04,4 (3,54,9)	† 	6th speed 1/min: 1000 Charge press. hPa: 1000 Del.quantity cm3/: 79,582,5
3rd speed 1/min: Charge press. hPa:	1150	-	1000H.: (77,584,5) 7th speed 1/min: 850
TD travel mm:	5,26,0 (4,96,3)	+	Charge press. hPa: 1000 Del.quantity cm3/: 85,586,5 1000H.: (83,089,0)
Supply-pump pressur	e characteristic:	† 	8th speed 1/min: 500 Charge press. hPa: -
1st speed 1/min: Charge press. hPa:	500 1000	<u>†</u>	Del.quantity cm3/: 63,564,5 1000H: (60,068,0) 9th speed 1/min: 500
Supply-pump pressure bar: bar:		+	Charge press. hPa: 1000 Del.quantity cm3/: 90,098,0
2nd speed 1/min: Charge press. hPa: Supply-pump	850 1000	‡	1000H: - Zero delivery (stop):
pressure bar: bar: 3rd speed 1/min:	5,66,2 (5,46,4)	+	Mech. shutoff:
3rd speed 1/min: Charge press. hPa: Supply-pump	1150 1000	† 	Speed 1/min: 1150 Del.quantity_cm3/: 03
pressure bar:	6,97,5 (6,77,7)	+	1000H.: - Electr. shutoff:
Overflow quantity a	t overflow valve:	Ŧ	
1st speed 1/min: Charge press. hPa:		† † †	Speed 1/min: 375 Del.quantity cm3/: 0,03,0 max. 1000H.: -
Oveflow: quantity cm3/10s: 2nd speed 1/min:	-	-	Idle delivery:
Charge press. hPa: Overflow quantity cm3/10s:	1000 2050	 	1st speed 1/min: 375 Del.quantity cm3/: 8,014,0 1000H.: (6,016,0)
Delivery-quant. and		 	2nd speed
1st speed 1/min: Charge-air pressure point hPa:	700 -setting 350	+	Automatic starting fuel delivery:
Del.quantity cm3/: 1000H.:	79,580,5 (76,084,0)	+	1st speed 1/min: 130 Del.quantity cm3/: -
2nd speed 1/min: Charge press. hPa: Del.quantity cm3/:	1000	Ī	ind. 1000H: 60,0 2nd speed 1/min: 230
3rd speed 1/min:	1260	†	Del.quantity cm3/: - max. 1000H: 60,0
Charge press. hPa: Del.quantity cm3/: 1000H.:	15,055,0	Ī	Shutoff electromagnet:
4th speed 1/min: Charge press. hPa: Del.quantity cm3/:	1220 1000 62,568,5	+	Cut-in min. voltage : 20,0 Rated voltage : 24,0
5th speed 1/min:	(59,571,5 1150 1000	‡	Mounting and assembly dimensions:
Del.quantity cm3/:	76,079,0 (74,580,5)	+	Designation K mm : -

KF mm : 5,0...5,4
MS mm : 1,0...1,4
SVS max. mm : 2,6
XK mm : XL mm : -

Remarks:

: C.D.C. # 391 7519

* Correction at adjusting nut (46)

Operate control lever after each manifold-pressure compensator pressure change.

Heavy-duty fuel-injection pump for DI-engines: only test using timing-device-travel measuring device with metal jacket

Note inst. in remarks column

: CUM 3,9 P3 Test sheet Edition : 27.3.90

replaces

Calibrating oil : ISO 4113

Injection pump : VE 4/12F1100 R374-2

: 0 460 424 073 Type number

Customer-specific information

Customer : CDC

: 4 BTA 3,9 IND Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening |

pressure bar: 250...253

Perforated-plate

mm: 0.5 diameter

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

mm : 0,3 Prestroke

(from BDC): -0.02(0.04)

Start of delivery block mm: 1,55 Piston stroke

mm: -+0.02(0.06)

Outlet : A

Injection-pump setting values Test specifications in parentheses

Timing device travel:

1/min: 1100 Speed Charge press. hPa: 1000 Setting value mm: 4,9...5,7

Supply-pump pressure:

1/min: 850 Charge press. hPa: 1000 Setting value bar: 5,6...6,2

Full-load del. with charge press.:

1/min: 850 Speed Charge press. hPa: 1000

Charge press. 10.4. 102. Del.quantity cm3/ 1000H.: 100,5...101,5 Dispersion cm3/: 4,0 1000H: -

Full-load del. w/out charge press.:

1/min : 500 Speed

Del.quantity cm3/ 1000H.: 86,0...87,0

Low-idle speed regulation:

Speed 1/min: 375 Charge press. hPa: 1000

Del.quantity cm3/ 1000H.: 7,0...13,0 Dispersion cm3/: 5,5

1000H.: (7,0)

Full-load speed regulation:

1/min: 1150 Speed Charge press. hPa: 1000

Del.quantity cm3/

1000H: 73,0...79,0

Start:

1/min: 100 Speed Del.quantity

cm3/1000H.: 80,0 mind

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500 Charge press. hPa: 1000 TD travel

mm: 1,8...2,6 mm: (1,5...2,9)

2nd speed 1/min: 850 Charge press. hPa: 1000

TD travel mm: 4,0...4,4mm: (3,5...4,9)

1/min: 1100 3rd speed

K06

Charge press. hPa: TD travel mm: mm:	1000 4,95,7 (4,66,0)	†	Del.quantity cm3/: 97,5100,5 1000H.: (95,5102, 7th speed 1/min: 850 Charge press. hPa: 1000	; .52
Supply-pump pressure	e characteristic:	Ī	Del.quantity cm3/: 100,5101, 1000H.: (98,0104,	5.0
bar: 2nd speed 1/min: Charge press. hPa: Supply-pump	4,04,6 (3,84,9) 850	+++++++++++++++++++++++++++++++++++++++	8th speed 1/min: 500 Charge press. hPa: - Del.quantity cm3/: 86.087,0 1000H: (82,590,5 9th speed 1/min: 500 Charge press. hPa: 1000 Del.quantity cm3/: 110,5120, 1000H: -	5)
bar: 3rd speed 1/min:	(5,46,4) 1100	Ī.	Zero delivery (stop):	
Charge press. hPa: Supply-pump	1000	‡	Mech. shutoff:	
pressure bar: bar:	(6,57,5)	† + + +	Speed 1/min: 1100 Del.quantity cm3/: 03 1000H.: -	
Overflow quantity at		‡	Electr. shutoff:	
1st speed 1/min: Charge press. hPa: Oveflow: quantity cm3/10s: 2nd speed 1/min:	1530 - 1100	‡ ‡	Speed 1/min: 375 Del.quantity cm3/: 0,03,0 max. 1000H.: -	
Charge press. hPa: Overflow : quantity cm3/10s:	2050	<u>†</u>	Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 7,013,0	
Delivery-quant. and	breakaway char.:	+	2nd speed 1/min: 420	
1st speed 1/min: Charge-air pressure- point hPa:	-setting 350	+	Del.quantity cm3/: 0,04,0 1000H.: -	
Del.quantity cm3/: 1000H.:	96,597,5 (96,697,4)	‡	Automatic starting fuel delivery	' :
2nd speed 1/min: KSB solenoid-operate valve volt: Del.quantity cm3/:	ed 1000 0,03,0	†	1st speed 1/min: 130 Del.quantity cm3/: - ind. 1000H: 80,0	
1000H.: 3rd speed 1/min: Charge press. hPa: Del.quantity cm3/:	1230 1000	† †	2nd speed 1/min: 230 Del.quantity cm3/: - max. 1000H: 100,0	
1000H.: 4th speed 1/min:	enda-	+	Mounting and assembly dimensions	:
Charge press. hPa: Del.quantity cm3/: 1000H.: 5th speed 1/min: Charge press. hPa:	1000 73,079,0 (70,082,0) 1100 1000	+++++	Designation K mm : - KF mm : 5,05,4 MS mm : 1,01,4 SVS max. mm : 2,3	
Del.quantity cm3/: 1000H.: 6th speed 1/min:	(89,095,0)	‡	XK mm : 21,823,8 XL mm : 13,216,6	
Charge press. hPa:		+	Remarks:	۲۸)

Operate control lever after each manifold-pressure compensator pressure change.

Heavy-duty fuel-injection pump for DI-engines: only test using timing-device-travel measuring device with metal jacket

Note inst. in remarks column

: CUM 5,9 S2 Test sheet Edition : 28.3.90 : 11.12.86 replaces Calibrating oil : ISO 4113

: VE 6/12F1200 R225-6 Injection pump Type number : 0 460 426 073

Customer-specific information

: CDC Customer

: 6 BT-5,9 IND. Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening |

bar: 250...253 pressure

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

Prestroke mm: 0,3 (from BDC): +0.02

Start of delivery block mm: 1,5 Piston stroke

mm: -10,02(0,06)

: D Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 750

Setting value mm: 3,4...3,8

Supply-pump pressure:

1/min: 750 Setting value bar: 3,5...4,1

Full-load del. w/out charge press.:

1/min: 1100 Speed

Del.quantity cm3/ 1000H.: 61,5...62,5

Low-idle speed regulation:

1/min: 340 Speed

Del.quantity cm3/ 1000H.: 8,0...14,0 Dispersion cm3/: 5,5 1000H.: (7,0)

Full-load speed regulation:

1/min: 1265 Speed

Del.quantity cm3/ 1000H: 42,5...48,5

Start:

Speed 1/min: 100 Del.quantity

mind cm3/1000H.: 50,0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 500 1st speed

TD travel

mm: 1,5...2,3 mm: (1,2...2,6) 1/min: 750 mm: 3,4...3,8 mm: (2,9...4,3) 2nd speed TD travel

1/min: 1100

3rd speed TD travel mm: 5, 2, ..., 6, 0

mm: (4,9...6,3)

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

pressure

bar: 2,4...3,0 bar: (2,2...3,2) 1/min: 750

2nd speed Supply-pump

pressure

bar: 3,5...4,1 bar: (3,3...4,3) 1/min: 1100

3rd speed

Supply-pump bar: 4,8...5,4 pressure bar: (4,6...5,6)Overflow quantity at overflow valve: 1st speed 1/min: 500 Oveflow : 15...30 quantity cm3/10s: -1/min: 1200 2nd speed : 20...50 Overflow quantity cm3/10s: -Delivery-quant. and breakaway char.: 1/min: 1330 2nd speed Del.quantity cm3/: U 1000H.: cm3/: 0.0...15.03rd speed 1/min: 1280 Del.quantity cm3/: 15,0...55,0 1000H.: -1/min: 1265 4th speed Del.quantity cm3/: 42,5...48,5 1000H.: (39,5...51,5) Zero delivery (stop): Mech. shutoff: 1/min: 1200 Speed Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: Speed 1/min: 340 Del.quantity cm3/: 0,0...3,0 max. 1000H.: max. Idle delivery:

1st speed 1/min: 340
Del.quantity cm3/: 8,0...14,0
1000H.: (6,0...16,0)
2nd speed 1/min: 500
Del.quantity cm3/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130
Del.quantity cm3/: ind. 1000H: 60,0

2nd speed 1/min: 400
Del.quantity cm3/: -

Del.quantity cm3/: max. 1000H: 70,0 Shutoff electromagnet:

Cut-in

min. voltage : 10,0 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm : 5,0...5,4 KF mm : 1,2...1,6 MS mm : 1,6 SVS max. mm : 18,8...20,8 XK mm : 12,0...15,4 XL mm

Remarks:

: C.D.C. # 390 8216 Heavy-duty fuel-injection pump for DI-engines: only test using timingdevice-travel measuring device with metal jacket

Note inst. in remarks column

: CUM 5,9 L10 Test sheet : 28.3.90 Edition

replaces

: ISO 4113 Calibrating oil

: VE 6/12F1100 R173-7 Injection pump

Type number : 0 460 426 089

Customer-specific information

: CDC Customer

Engine : 6 BTA-5,9 IND.

k: 141 1/mi: 2200 Power Speed

TEST BENCH REQUIREMENTS

Calibrating oil return temp.

with thermometer : 40...48 : 42...50 electronically

Inlet press., bar: 0,35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

bar: 250...253 pressure

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

mm : 0.3Prestroke

(from BDC): $\rightarrow 0.02(0.04)$

Start of delivery block Piston stroke mm: 1,85

mm: -+0.02(0.06)

Out Let

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900 Charge press. hPa: 1000 Setting value mm: 2,0...2,4

Supply-pump pressure:

Speed 1/min: 900 Charge press. hPa: 1000 Setting value bar: 4,3...4,9

Full-load del. with charge press.:

Speed 1/min: 750 Charge press. hPa: 1000

Del.quantity cm3/

1000H.: 64,0...74,0

cm3/:4.0Dispersion 1000H : -

Full-load del. w/out charge press.:

Speed 1/min : 500 Del.quantity cm3/ 1000H.: 39,0...40,0

Low-idle speed regulation:

1/min: 375 Charge press. hPa: 1000

Del.quantity cm3/ 1000H.: 8,0...14,0

Full-load speed regulation:

1/min: 1140 Speed Charge press. hPa: 1000 Del.quantity cm3/ 1000H: 46,0...52,0

Start:

1/min: 140 Speed Del.quantity mind cm3/1000H.: 60.0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 700 1st speed Charge press. hPa: 1000 TD travel mm: 0.8...1.6

mm: -2nd speed 1/min: 900 Charge press. hPa: 1000 TD travel mm: 2,0...2,4

mm: -

Supply-pump pressure characteristic:	3rd speed 1/min: 1050 Charge press. hPa: 1000 TD travel mm: 2,43,2 mm: -	Del.quantity cm3/: 64,567,5 1000H.: - 7th speed 1/min: 900 Charge press. hPa: 1000
1st speed 1/min: 500 Charge press. hPa: 1000 Supply-pump pressure bar: 2,63,2 bar: - 2nd speed 1/min: 900 Charge press. hPa: 1000 Supply-pump pressure bar: 4,34,9 bar: - 3rd speed 1/min: 1050 Charge press. hPa: 1000 Supply-pump pressure bar: 4,95,5 bar: - Overflow quantity at overflow valve: 1st speed 1/min: 500 Charge press. hPa: 1000 Supply-pump pressure bar: 4,95,5 bar: - Overflow quantity at overflow valve: 1st speed 1/min: 500 Charge press. hPa: - Overflow quantity at overflow valve: 1st speed 1/min: 500 Charge press. hPa: - Overflow i 1530	Supply-pump pressure characteristic:	+ 1000H.: -
pressure bar: 2.63,2 bar: - 2nd speed 1/min: 900 Charge press. hPa: 1000 Supply-plump pressure bar: 4,34,9 bar: - 3rd speed 1/min: 1050 Charge press. hPa: 1000 Supply-plump pressure bar: 4,95,5 bar: - Overflow quantity at overflow valve: 1st speed 1/min: 500 Charge press. hPa: 1000 Supply-plump pressure bar: 4,95,5 bar: - Overflow quantity at overflow valve: 1st speed 1/min: 500 Charge press. hPa: 1000 Charge press. hPa: 1000 Charge press. hPa: 1000 Quantity cm3/10s: - 2nd speed 1/min: 500 Overflow : 2050 quantity cm3/10s: - Delivery-quant. and breakaway char: - 1st speed 1/min: 700 Charge-air pressure-setting point hPa: 400 Del.quantity cm3/: 0,03,0 2nd speed 1/min: 250 Charge press. hPa: 1000 Del.quantity cm3/: 0,03,0 1000H: - 2nd speed 1/min: 250 Charge press. hPa: 1000 Charge-air pressure-setting point hPa: 400 Del.quantity cm3/: 0,03,0 1000H: - 2nd speed 1/min: 250 Charge press. hPa: 1000 Del.quantity cm3/: 0,03,0 1000H: - 2nd speed 1/min: 250 Charge press. hPa: 1000 Del.quantity cm3/: 0,03,0 1000H: - 2nd speed 1/min: 240 Del.quantity cm3/: 0,05,0 Mounting and assembly dimensions: KF mm : 7,05,4 MS mm : 1,21,6 SVS max. mm : 2,4 MS mm : 1,21,6 SVS max. mm : 2,4 MS mm : 1,21,6 SVS max. mm : 2,4 MS mm : 1,21,6 SVS max. mm : 2,4 MS mm : 1,21,6 SVS max. mm : 2,4 MS mm : 1,21,6 SVS max. mm : 2,4 MS mm : 1,21,6 SVS max. mm : 2,4 MS mm : 1,21,6 SVS max. mm : 2,4 MS mm : 1,21,6 SVS max. mm : 2,4 MS mm : 1,21,6 SVS max. mm : 2,4 MS mm : 1,21,6 SVS max. mm : 2,4 MS mm : 1,21,6 SVS max. mm : 2,4 MS mm : 1,21,6 SVS max. mm : 2,4 MS mm : 1,21,6 SVS max. mm : 2,4 MS mm : 1,21,6 SVS max. mm : 2,4 MS mm : 1,21,6 SVS max. mm : 2,4 MS mm : 1,21,6 SVS max at adjusting nut (46)	Charge press. hPa: 1000	- Charge press. hPa: 1000 - Del.quantity cm3/: 68,569,5
Supply-pump pressure bar: 4,34,9 bar: -	pressure bar: 2,63,2 bar: - 2nd speed 1/min: 900	+ 9th speed 1/min: 500 + Charge press. hPa: 1000 + Del.quantity cm3/: 65,073,0
Charge press. hPa: 1000 Supply-pump pressure bar: 4,95,5 bar: - Overflow quantity at overflow valve: 1st speed 1/min: 500 Charge press. hPa: - Oveflow : 1530 quantity cm3/10s: - 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 2050 quantity cm3/10s: - Delivery-quant. and breakaway char.: 1st speed 1/min: 100 Overflow : 2050 quantity cm3/10s: - Delivery-quant. and breakaway char.: 1st speed 1/min: 100 Del.quantity cm3/: 57,067,0 2nd speed 1/min: 1250 Charge press. hPa: 1000 Del.quantity cm3/: 57,067,0 2nd speed 1/min: 1250 Charge press. hPa: 1000 Del.quantity cm3/: 0,03,0 1000H: - 3rd speed 1/min: 1200 Charge press. hPa: 1000 Del.quantity cm3/: 0,015,0 1000H: - 4th speed 1/min: 1160 Charge press. hPa: 1000 Del.quantity cm3/: 0,015,0 2nd speed 1/min: 1160 Charge press. hPa: 1000 Del.quantity cm3/: 0,015,0 2nd speed 1/min: 1200 Charge press. hPa: 1000 Del.quantity cm3/: 0,015,0 2nd speed 1/min: 1200 Charge press. hPa: 1000 Del.quantity cm3/: 0,015,0 2nd speed 1/min: 240 Del.quantity cm3/: - 2nd speed 1/min: 140 Del.quantity cm3/: - 3rd speed 1/min: 140 Del.quantity cm3/: - 3rd speed 1/min: 240 Del.quantity cm3/: - 3rd speed 1/min: 240 Del.quantity cm3/: - 3rd speed 1/min: 240 Del.quantity cm3/: - 3rd speed 1/min: 140 Del.quantity cm3/: - 3rd speed 1/min: 240 Del.quantity cm3/: - 3rd speed 1/min: 140 Del.quantity cm3/: - 3rd speed 1/min: 240 Del.quantity cm3/: - 3rd speed 1/min: 140 Del.quantity cm3/: - 3rd speed 1/min: 240 Del.quantity cm3/: - 3rd speed 1/min: 140 Del.quantity cm3/: - 3rd speed 1/min: 140 Del.quantity cm3/: - 3rd speed 1/min: 240 Del.quantity cm3/: - 3rd speed 1/min: 140 Del.	Supply-pump pressure bar: 4,34,9 bar: -	+ 10th speed 1/min: 500 + Charge press. hPa: - + Del.quantity cm3/: 39,040,0
Description Description	Charge press. hPa: 1000 Supply-pump	+
1st speed 1/min: 500	bar: -	Idle delivery:
quantity cm3/10s: - Del.quantity cm3/: 0,04,0 Charge press. hPa: 1000 Automatic starting fuel delivery: Overflow quantity cm3/10s: - 1st speed 1/min: 100 Delivery-quant. and breakaway char.: 1st speed 1/min: 100 Deliquantity cm3/: 57,067,0 2nd speed 1/min: 140 Deliquantity cm3/: 57,067,0 Deliquantity cm3/: - 1000H.: - 3rd speed 1/min: 240 2nd speed 1/min: 1250 2nd speed 1/min: 240 2nd speed 1/min: 250 2nd speed 1/min: 240 2nd speed 1/min: 240 2nd speed 1	1st speed	+ Del.quantity cm3/: 8,014,0 + 1000H.: -
Delivery-quant. and breakaway char.: 1st speed 1/min: 700 Charge-air pressure-setting point hPa: 400 Del.quantity cm3/: - 1000H: 60,0 1000H: - 2nd speed 1/min: 1250 Charge press. hPa: 1000 Del.quantity cm3/: 0,03,0 1000H: - 3rd speed 1/min: 1200 Charge press. hPa: 1000 Del.quantity cm3/: 0,015,0 The press has 1000 The press	quantity cm3/10s: - 2nd speed 1/min: 1050	+ 2nd speed 1/min: 500 + Del.quantity cm3/: 0,04,0 + 1000H.: -
Delivery-quant. and breakaway char.: 1st speed 1/min: 700 Charge-air pressure-setting point hPa: 400 Del.quantity cm3/: 57,067,0 1000H: - 2nd speed 1/min: 140 Del.quantity cm3/: - 1000H: - 3rd speed 1/min: 240 Del.quantity cm3/: - 2nd speed 1/min: 240 Del.quantity cm3/: - 3rd speed 1/min: 240 Del.quantity cm3/: - 1000H: - 3rd speed 1/min: 400 Del.quantity cm3/: - 1000H: - 3rd speed 1/min: 400 Del.quantity cm3/: - 1000H: 60,0 Mounting and assembly dimensions: Mounting and assembly dimensions: K mm: - KF mm: 5,05,4 MS mm: 1,21,6 Del.quantity cm3/: 0,015,0 MS mm: 1,21,6 Del.quantity cm3/: 0,052,0 The speed 1/min: 1140 Charge press. hPa: 1000 Del.quantity cm3/: 46,052,0 The speed 1/min: 1140 Charge press. hPa: 1000 Del.quantity cm3/: - 1000H: - 5th speed 1/min: 1140 Charge press. hPa: 1000 Del.quantity cm3/: - 1000H: - 5th speed 1/min: 1140 Charge press. hPa: 1000 Del.quantity cm3/: - 1000H: - 5th speed 1/min: 1140 Charge press. hPa: 1000 Del.quantity cm3/: - 1000H: - 1	Overflow: 2050	+ Automatic starting fuel delivery:
Charge-air pressure-setting point hPa: 400 Del.quantity cm3/: 57,067,0 1000H: - 2nd speed 1/min: 1250 Charge press. hPa: 1000 Del.quantity cm3/: 0,03,0 1000H: - 3rd speed 1/min: 1200 Charge press. hPa: 1000 Del.quantity cm3/: 0,015,0 Del.quantity cm3/: 0,015,0 Del.quantity cm3/: 0,015,0 Del.quantity cm3/: 0,015,0 The speed 1/min: 1160 Charge press. hPa: 1000 Del.quantity cm3/: 0,015,0 Del.quantity cm3/: 0,015,0 Del.quantity cm3/: 0,015,0 The speed 1/min: 1140 Charge press. hPa: 1000 Del.quantity cm3/: 46,052,0 Del.quantity cm3/: 46,052,0 The speed 1/min: 1050 Indicate the speed 1/min: 140 The speed 1/min: 140 The speed 1/min: 1050 Indicate the speed 1/min: 140 The speed 1/min: 140 The speed 1/min: 1050 Indicate the speed 1/min: 140 The speed	• •	+ Del.quantity cm3/: -
2nd speed 1/min: 1250 Charge press. hPa: 1000 Del.quantity cm3/: 0,03,0 1000H: - 3rd speed 1/min: 1200 1000H: - 3rd speed 1/min: 1200 Charge press. hPa: 1000 Del.quantity cm3/: 0,015,0 1000H: - 4th speed 1/min: 1160 Charge press. hPa: 1000 Del.quantity cm3/: 0,015,0 Del.quantity cm3/: 0,015,0 XF mm : 5,05,4 Charge press. hPa: 1000 Del.quantity cm3/: 0,015,0 XK mm : 2,4 1000H: - SVS max. mm : 2,4 XK mm : 20,222,2 XK mm : 20,222,2 XL mm : 11,214,6 Charge press. hPa: 1000 Del.quantity cm3/: 46,052,0 Del.quantity cm3/: 46,052,0 Charge press. hPa: 1000 Del.quantity cm3/: 46,052,0 The speed 1/min: 1050 **Correction at adjusting nut (46)	Charge-air pressure-setting point hPa: 400 Del.quantity cm3/: 57,067,0	<pre>Del.quantity cm3/: -</pre>
3rd speed 1/min: 1200 Charge press. hPa: 1000 Del.quantity cm3/: 0,015,0 4th speed 1/min: 1160 Charge press. hPa: 1000 Del.quantity cm3/: 0,015,0 Mounting and assembly dimensions: Designation K mm: - KF mm: 5,05,4 MS mm: 1,21,6 SVS max. mm: 2,4 1000H.: - Sth speed 1/min: 1140 Charge press. hPa: 1000 Del.quantity cm3/: 46,052,0 Del.quantity cm3/: 46,052,0 Toooh: - 6th speed 1/min: 1050 Mounting and assembly dimensions: CED.C. # 390 4731	2nd speed 1/min: 1250 Charge press. hPa: 1000 Del.quantity cm3/: 0,03,0	+ Del.quantity cm3/: -
4th speed 1/min: 1160 + KF mm : 5,05,4 Charge press. hPa: 1000 + MS mm : 1,21,6 Del.quantity cm3/: 0,015,0 + SVS max. mm : 2,4 1000H.: - + XK mm : 20,222,2 5th speed 1/min: 1140 + XL mm : 11,214,6 Charge press. hPa: 1000 + Remarks: : C.D.C. # 390 4731 6th speed 1/min: 1050 + * Correction at adjusting nut (46)	3rd speed 1/min: 1200 Charge press. hPa: 1000 Del.quantity cm3/: 0,015,0	Designation
Charge press. hPa: 1000 Del.quantity cm3/: 46,052,0 1000H.: - 6th speed 1/min: 1050 Remarks: : C.D.C. # 390 4731 - * Correction at adjusting nut (46)	4th speed 1/min: 1160 Charge press. hPa: 1000 Del.quantity cm3/: 0,015,0 1000H.: -	+ KF mm : 5,05,4 + MS mm : 1,21,6 + SVS max. mm : 2,4 + XK mm : 20,222,2
6th speed 1/min: 1050 + * Correction at adjusting nut (46)	Charge press. hPa: 1000 Del.quantity cm3/: 46,052,0	+ Remarks:
	6th speed 1/min: 1050	

Heavy-duty fuel-injection pump for DI-engines: only test using timing-device-travel measuring device with metal jacket

Operate control lever after each manifold-pressure compensator pressure change.

Note inst. in remarks column

: CUM 5,9 W30 : 17.04.90 Test sheet Edition

replaces

Calibrating oil : ISO 4113

Injection pump : VE 6/12F1250 R195-1

: 0 460 426 091 Type number

Customer-specific information

: CDC Customer

Engine : 590A

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40...48 : 42...50 electronically

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

pressure bar: 250...253

Perforated plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm : 840 x Length

Start of delivery

mm : 0.3Prestroke

(from BDC): +-0.02(0.04)

Start of delivery block mm: 2,05 Piston stroke

mm: +0.02(0.06)

: D Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 900 Speed Charge press. hPa: 1000 Setting value mm: 1,8...2,2

Supply-pump pressure:

1/min: 900 Speed Charge press. hPa: 1000 Setting value bar: 5,0...5,6

Full-load del. with charge press.:

1/min: 1100 Speed Charge press. hPa: 1000

cm3/:4,0Dispersion 1000H : (4,5)

Full-load del. w/out charge press.:

1/min: 500 Speed

Del.quantity cm3/

1000H.: 64,5...65,5

Low-idle speed regulation:

1/min: 365 Speed Charge press. hPa: -Del.quantity cm3/ 1000H.: 9,5...13,5 Dispersion cm3/: 5,5

1000H.: (7,0)

Full-load speed regulation:

1/min: 1360 Speed Charge press. hPa: 1000

Del.quantity cm3/ 1000H: 58,5...64,5

Start:

1/min: 100 Speed Charge press. hPa: -Del.quantity mind cm3/1000H.: 70,0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 750 1st speed Charge press. hPa: 1000 TD travel

mm: 0,5...1,3 mm: (0,2...1,6)

1/min: 900 2nd speed Charge press. hPa: 1000

TD travel

mm: 1,8...2,2 mm: (1,3...2,7)

3rd speed 1/min: 1100 Charge press. hPa: 1000 TD travel mm: 2,73,5 mm: (2,43,8) 4th speed 1/min: 1250 Charge press. hPa: 1000 TD travel mm: 2,83,6 mm: (2,53,9)	Charge press. hPa: 1000 Del.quantity cm3/: 77,080,0 1000H.: (75,581,5) 7th speed 1/min: 1100 Charge press. hPa: 1000 Del.quantity cm3/: 78,579,5 1000H.: (76,082,0) 8th speed 1/min: 750 Charge press. hPa: 1000
Supply-pump pressure characteristic:	+ Del.quantity cm3/: 79,582,5
1st speed 1/min: 500 Charge press. hPa: 1000 Supply-pump pressure bar: 3,23,8 2nd speed 1/min: 900 Charge press. hPa: 1000 Supply-pump pressure bar: 5,05,6 3rd speed 1/min: 1100	1000H: (78,084,0) 9th speed 1/min: 700 Charge press. hPa: 550 Del.quantity cm3/: 72,073,0 1000H: (68,077,0) 10th speed 1/min: 500 Charge press. hPa: Del.quantity cm3/: 64,565,5 1000H: (60,569,5)
Charge press. hPa: 1000 Supply-pump	Zero delivery (stop):
pressure bar: 5,96,5	Mech. shutoff:
Overflow quantity at overflow valve: 1st speed 1/min: 500	Speed 1/min: 1250 Del.quantity cm3/: 03 1000H.: -
Charge press. hPa: - Oveflow: 4183 quantity cm3/10s: (2698) 2nd speed: 1/min: 1250 Charge press. hPa: 1000 Overflow: 55138 quantity cm3/10s: (40153)	Electr. shutoff: Speed 1/min: 365 ELAB volt: - Del.quantity cm3/: 0,03,0 max. 1000H.: -
Delivery-quant. and breakaway char.:	Idle delivery:
1st speed 1/min: 700 Charge-air pressure-setting point hPa: 550 LDA stroke mm: 5,8 Del.quantity cm3/: 72,073,0 1000H.: (68,077,0) 2nd speed 1/min: 1520	1st speed 1/min: 365 Del.quantity cm3/: 9,513,5 1000H.: (6,516,5) 2nd speed 1/min: 450 Del.quantity cm3/: 0,04,0 1000H.: -
2nd speed 1/min: 1520 Charge press. hPa: 1000 Del.quantity_cm3/: 0,03,0	Automatic starting fuel delivery:
1000H.: - 3rd speed 1/min: 1480 Charge press. hPa: 1000 Del.quantity cm3/: 0,015,0	1st speed 1/min: 250 Del.quantity cm3/: - ind. 1000H: 90,0
1000H.: - 4th speed 1/min: 1440 Charge press. hPa: 1000 Del.quantity cm3/: 15,055,0 1000H.: -	- 2nd speed 1/min: 350 - Del.quantity cm3/: max. 1000H: 95,0 - Shutoff electromagnet:
5th speed 1/min: 1360 Charge press. hPa: 1000 Del.quantity cm3/: 58,564,5 1000H.: (55,567,5) 6th speed 1/min: 1250	Cut-in min. voltage : 10,0 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

Remarks:

: C.D.C. # 390 7648

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut (46)

Heavy-duty fuel-injection pump for DI-engines: only test using timing-device-travel measuring device with metal jacket

Note inst. in remarks column

: FIA 5,5 R : 03.05.90 Test sheet Edition : 19.07.89 replaces : ISO 4113 Calibrating oil

: VE 6/12F1350 R329 Injection pump : 0 460 426 119 Type number

Customer-specific information : IVECO-FIAT Customer

: 8060.25.221 Engine

k: 114 Power

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

: 1 688 901 020 assembly

Opening

bar: 172...175 pressure

Perforated-plate

diameter mm : 0.6

Test inj. tubing : 1 680 750 017

Outside diameter x Wall thickness : 2 mm: 840 x Length

Start of delivery

Prestroke mm: 0,2

(from BDC): +0.02(0.04)

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1200 Charge press. hPa: 1000 Setting value mm: 3,0...3,4

Supply-pump pressure:

Speed 1/min: 1200 Charge press. hPa: 1000 Setting value bar: 7,7...8,3

Full-load del. with charge press.:

1/min: 1200 Speed Charge press. hPa: 1000

Del.quantity cm3/ 1000H.: 103,5...104,5 Dispersion cm3/: 5,0 1000H: -

Full-load del. w/out charge press.:

 $1/\min : 500$ Speed Del.quantity cm3/

1000H.: 66,6...67,5

Low-idle speed regulation:

Speed 1/min: 350 Charge press. hPa: -Del.quantity cm3/

1000H.: 13,0...17,0 cm3/: 3,5

Dispersion 1000H .: -

Full-load speed regulation:

Speed 1/min: 1500 Charge press. hPa: 1000

Deliquantity cm3/

1000H: 37,0...43,0

Start:

1/min: 100 Speed Del.quantity cm3/1000H.: 75,0 mind

Load-dependent start of delivery:

Speed 1/min: 1200 Charge press. hPa: 1000

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 900 1st speed Charge press. hPa: 1000

mm: 0,7...1,5 mm: (0,4...1,8) 1/min: 1200 TD travel

2nd speed Charge press. hPa: 1000

mm: (2,53,9)	1000H.: (101,0107,0)
3rd speed 1/min: 1350	6th speed 1/min: 800_
Change proce here 1000	Charge press. hPa: 1000
Charge press. hPa: 1000	1 Not might the cm ² /· 08 5 101 5
TD travel mm: 3,64,4	Del.quantity cm3/: 98,5101,5 1000H.: (97,0103,0) 7th speed 1/min: 500
nm: (3,34,7)	7-b 1/min 500
	t /th speed /////// 500
Supply-pump pressure characteristic:	Charge press. hPa: 500
	Del.quantity_cm3/: 81,082,0
1st speed 1/min: 500	1000H.: (78,584,5)
Charge press. hPa: 1000	8th speed 1/min: 500
Supply-pump -	- Charge press. hPa: -
pressure bar: 5,05,6	Del.quantity cm3/: 66,567,5
2nd speed 1/min: 900	1000H: (64,070,0)
Charge press. hPa: 1000	-
Supply-pump -	- Zero delivery (stop):
pressure bar: 6,67,2	
3rd speed 1/min: 1200 -	Mech. shutoff:
Charge press. hPa: 1000	_
Supply-pump -	- Speed 1/min: 1350
pressure bar: 7,78,3	- Deliquantity cm3/: 03
pressure bar: 7,78,3 4th speed 1/min: 1350	1000н.: -
Charge press. hPa: 1000	-
Supply-pump -	- Electr. shutoff:
pressure bar: 8,38,9	-
p. 600a, 6	Speed 1/min: 400
Overflow quantity at overflow valve:	ELAB volt: -
over rear quarterly as over rear various	Del.quantity cm3/: 0,03,0
1st speed 1/min: 500	- max. 1000H.: -
Charge press. hPa: 1000	The state of the s
Oveflow : 4183	Idle delivery:
quantity cm3/10s: (2698)	1410 40111017.
2nd speed 1/min: 1350	1st speed 1/min: 350
Charge press. hPa: 1000	Del.quantity cm3/: 13,017,0 1000H.: (10,020,0)
Overflow : 55138	1000H · (10 0 20 0)
quantity cm3/10s: (40153)	2nd speed 1/min: 450
qualitity (115) 105. (40155)	Del.quantity cm3/: 0,05,0
Delivery grant and breakarsy chan	1000H.: -
Delivery—quant. and breakaway char.:	100011
1st speed 1/min: 500*	Automatic starting fuel delivery:
	L. Automatic Starting race activery:
Charge-air pressure-setting	1st speed 1/min: 150
point hPa: 500	- 1st speed 1/min: 150 - Del.quantity cm3/: -
LDA stroke mm: 4,8	ind. 1000H: 85,0
Del.quantity cm3/: 81,082,0	find. 1000H: 85,0
1000H.: (78,584,5)	- 2nd speed 1/min: 300
2nd speed 1/min: 1600	
Charge press. hPa: 1000	- Del.quantity cm3/: - - max. 1000H:60,0
Del.quantity cm3/: 0,03,0	- max. 1000H: 60,0
1000H.: -	Shutoff electromagnet:
3rd speed 1/min: 1500	Shutor etectrollagher.
Charge press. hPa: 1000	Cut-in
Del.quantity cm3/: 37,043,0	- Cut-in - min. voltage : 10,0
1000H.: (34,046,0)	
4th speed 1/min: 1350	- Rated voltage : 12,0
Charge press. hPa: 1000	Mounting and accombly dimensions:
Del.quantity cm3/: 99,0102,0 - 1000H.: (97,5103,5)	- Mounting and assembly dimensions:
	- Dogi spoti oc
5th speed 1/min: 1200	- Designation
Charge press. hPa: 1000	- K mm:- - KF mm:5.05.4
_	L KE mm : 5.05.4

MS mm : SVS max. mm : -

* Correction at adjusting nut (46)

Operate control lever after each manifold-pressure compensator pressure change.

Note inst. in remarks column

: FIA 5,5 R1 Test sheet : 03.05.90 Edition : 19.07.89 replaces : ISO 4113 Calibrating oil

: VE 6/12F1350 R329-1 Injection pump

: 0 460 426 120 Type number

Customer-specific information : TVFCO-FIAT Customer

Engine : 8060.25.241

k: 100 Power

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

: 1 688 901 020 assembly

Opening .

bar: 172...175 pressure

Perforated-plate

diameter mm : 0.6

Test ini. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

mm : 0,2Prestroke

(from BDC): +0.02(0.04)

Injection pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1200 Charge press. hPa: 1000 Setting value mm: 3.0...3.4

Supply-pump pressure:

1/min: 1200 Speed Charge press. hPa: 1000 Setting value bar: 7,7...8,3

Full-load del. With charge press.:

1/min: 1200 Speed Charge press. hPa: 1000
Del.quantity cm3/
1000H.: 96,0...97,0
Dispersion cm3/: 5,0

1000H : -

Full-load del. w/out charge press.:

 $1/\min : 500$ Speed

Del.quantity cm3/

1000H.: 66,6...67,5

Low-idle speed regulation:

1/min: 350 Speed Charge press. hPa: -

Del.quantity cm3/

1000H.: 13,0...17,0 cm3/: 3,5

Dispersion 1000H .: -

Full-load speed regulation:

1/min: 1500 Speed Charge press. hPa: 1000

Del.quantity cm3/

1000H: 37,0...43,0

Start:

1/min: 100 Speed Del.quantity cm3/1000H.: 75,0 mind

Load-dependent start of delivery:

1/min: 1200 Speed Charge press. hPa: 1000

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 900 1st speed Charge press. hPa: 1000

mm: 0,7...1,5 mm: (0,4...1,8) TD travel

1/min: 1200 2nd speed

Charge press. hPa: 1000

TD travel mm: 3,03,4 mm: (2,53,9)	±	Del.quantity cm3/: 96,097,0 1000H.: (93,599,5)
3rd speed 1/min: 1350 Charge press. hPa: 1000	1	6th speed 1/min: 800 Charge press. hPa: 1000
TD travel mm: 3,64,4	1	Del.quantity cm3/: 90,593,5
mm: (3,34,7)	‡	1000H.: (89,095,0) 7th speed 1/min: 500
Supply-pump pressure characteristic:	†	Charge press. hPa: 500 Del.quantity cm3/: 81,082,0
1st speed 1/min: 500	+	1000H.: (78,584,5)
Charge press. hPa: 1000 Supply-pump	Ŧ	8th speed 1/min: 500 Charge press. hPa: -
pressure bar: 5,05,6 2nd speed 1/min: 900	‡	Del.quantity cm3/: 66,567,5 1000H: (64,070,0)
Charge press. hPa: 1000	+	Zero delivery (stop):
Supply-pump _pressure bar: 6,67,2	Ŧ	·
3rd speed 1/min: 1200 Charge press. hPa: 1000	<u>†</u>	Mech. shutoff:
Supply-pump	+	Speed 1/min: 1350
pressure bar: 7,78,3 4th speed 1/min: 1350	†	Del.quantity cm3/: 03 1000H.: -
Charge press. hPa: 1000	+	
Supply-pump pressure bar: 8,38,9	1	Electr. shutoff:
Overflow quantity at overflow valve:	1	Speed 1/min: 400 ELAB volt: -
	+	Del.quantity cm3/: 0,03,0
1st speed 1/min: 500 Charge press. hPa: 1000	‡	max. 1000H.: -
Oveflow: 4183	+	Idle delivery:
quantity cm3/10s: (2698) 2nd speed	‡	1st speed 1/min: 350
Charge press. hPa: 1000 Overflow : 55138	<u>†</u>	Del.quantity cm3/: 13,017,0 1000H.: (10,020,0)
quantity cm3/10s: (40153)	+	2nd speed 1/min: 450
Delivery-quant. and breakaway char.:	†	Del.quantity cm3/: 0,05,0 1000H.: -
1st speed 1/min: 500*	Ŧ	Automatic starting fuel delivery:
Charge-air pressure-setting point hPa: 500	‡	1st speed 1/min: 150
LDA stroke mm: 3,0	+	Del.quantity cm3/: -
Del.quantity cm3/: 81,082,0 1000H.: (78,584,5)	‡	ind. 1000H: 85,0
2nd speed 1/min: 1600 Charge press. hPa: 1000	+	2nd speed 1/min: 250 Del.quantity cm3/: -
Del.quantity cm3/: 0,03,0	Ŧ	max. 1000H: 60,0
1000H.: - 3rd speed	Ŧ	Shutoff electromagnet:
Charge press. hPa: 1000 Del.quantity cm3/: 37,^43,0	<u>†</u>	Cut-in
1000H.: (34,046,0)	+	min. voltage : 10,0
4th speed 1/min: 1350 Charge press. hPa: 1000	‡	Rated voltage : 12,0
Del.quantity cm3/: 92,595,5	†	Mounting and assembly dimensions:
1000H.: (91,097,0) 5th speed	Ŧ	Designation
Charge press. hPa: 1000	‡	K mm : - KF mm : 5,05,4
	t	• · · · · · · · ·

MS mm : -SVS max. mm : -

* Correction at adjusting nut (46)

Operate control lever after each manifold-pressure compensator pressure change.

Note inst. in remarks column

: CUM 5,9 W29 Test sheet : 10.04.90 Edition

replaces

: ISO 4113 Calibrating oil

: VE 6/12F1300 R195-3 Injection pump

: 0 460 426 122 Type number

Customer-specific information

Customer : CDC

Engine : 6 BT 5,9A

k: 117 1/mi: 2600 Power Speed

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Openina .

bar: 250...253 pressure

Perforated plate

mm: 0.5 diameter

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

mm : 0.3Prestroke

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke

mm: 2,35 mm: +-0,02(0,06)

Outlet.

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 850 Speed Charge press. hPa: 1000 Setting value mm: 2,6...3,0

Supply-pump pressure:

Speed 1/min: 850 Charge press. hPa: 1000 Setting value bar: 6,6...7,2

Full-load del. with charge press.:

Speed 1/min: 850 Charge press. hPa: 1000

Del quantity cm3/

1000H.: 73₂5...74,5

cm3/:4.0Dispersion 1000H : (4,5)

Full-load del. w/out charge press.:

1/min: 500 Speed Del.quantity cm3/

1000H.: 50,5...51,5 cm3/: 9,0

Dispersion 1000H.: (9,0)

Low-idle speed regulation:

1/min: 350 Speed

Del.quantity cm3/

1000H.: 9,0...11,0 cm3/: 5,5

Dispersion 1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1400 Charge press. hPa: 1000 Del.quantity cm3/ 1000H: 54,0...60,0

Start:

1/min: 100 Speed Del.quantity cm3/1000H.: 60,0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 700 Charge press. hPa: 1000

mm: 1,4...2,2 mm: (1,1...2,5) TD travel

2nd speed 1/min: 850

Charge press. hPa: 1000 TD travel mm: 2,63,0	+	Del.quantity cm3/: 65,068,0 1000H.: (63,569,5)
mm: (2,13,5) 3rd speed 1/min: 1300 Charge press. hPa: 1000	†	7th speed 1/min: 1100 Charge press. hPa: 1000 Del.quantity cm3/: 69,572,5
TD travel mm: 2,93,7 mm: (2,64,0)	+	1000H.: (67,574,5) 8th speed
Supply-pump pressure characteristic:	+	Charge press. hPa: 1000 Del.quantity cm3/: 73,574,5 1000H: (71,077,0)
1st speed 1/min: 500 Charge press. hPa: 1000	1	9th speed 1/min: 700 Charge press. hPa: 475
Supply-pump pressure bar: 4,85,4	+	Del.quantity cm3/: 63.064.0 1000H: (59,567,5) 10th speed 1/min: 500
2nd speed 1/min: 850 Charge press. hPa: 1000	‡	Charge press. hPa: 1000
Supply-pump pressure bar: 6.67.2 3rd speed 1/min: 1300	Ī	Del.quantity cm3/: 82,592,5 1000H: - 11th speed 1/min: 500
Charge press. hPa: 1000 Supply-pump	+	Charge press. hPa: - Del.quantity cm3/: 50,551,5
pressure bar: 8,69,2 Overflow quantity at overflow valve:	<u> </u>	1000H: (47,055,0) Zero delivery (stop):
1st speed 1/min: 500	\pm	Mech. shutoff:
Charge press. hPa: -	Ŧ	
Oveflow : 104145 quantity cm3/10s: (89160)	1	Speed 1/min: 1300 Del.quantity_cm3/: -
2nd speed 1/min: 1300	+	1000H.: 03
2nd speed 1/min: 1300 Charge press. hPa: 1000 Overflow : 111194	+++++++++++++++++++++++++++++++++++++++	1000H.: 03 Electr. shutoff:
2nd speed 1/min: 1300 Charge press. hPa: 1000 Overflow : 111194 quantity cm3/10s: (96209)	+++++++++++++++++++++++++++++++++++++++	1000H.: 03 Electr. shutoff: Speed 1/min: 350 ELAB volt: -
2nd speed 1/min: 1300 Charge press. hPa: 1000 Overflow : 111194 quantity cm3/10s: (96209) Delivery-quant. and breakaway char.: 1st speed 1/min: 700*		1000H.: 03 Electr. shutoff: Speed 1/min: 350
2nd speed 1/min: 1300 Charge press. hPa: 1000 Overflow : 111194 quantity cm3/10s: (96209) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 475		1000H.: 03 Electr. shutoff: Speed 1/min: 350 ELAB volt: - Del.quantity cm3/: 0,03,0 max. 1000H.: - Idle delivery:
2nd speed 1/min: 1300 Charge press. hPa: 1000 Overflow : 111194 quantity cm3/10s: (96209) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 475 LDA stroke mm: 5,8 Del.quantity cm3/: 63,064,0 1000H.: (59,567,5)		1000H.: 03 Electr. shutoff: Speed 1/min: 350 ELAB volt: - Del.quantity cm3/: 0,03,0 max. 1000H.: - Idle delivery: 1st speed 1/min: 350 Del.quantity cm3/: 9,011,0
2nd speed 1/min: 1300 Charge press. hPa: 1000 Overflow : 111194 quantity cm3/10s: (96209) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 475 LDA stroke mm: 5,8 Del.quantity cm3/: 63,064,0	┤╸┤╺┤╸┤╸┤╸┤╸┤╸┤╸┤╸┤╸┤╸┤╸┤╸ ┤╸┩╾┩╸	1000H.: 03 Electr. shutoff: Speed 1/min: 350 ELAB volt: - Del.quantity cm3/: 0,03,0 max. 1000H.: - Idle delivery: 1st speed 1/min: 350 Del.quantity cm3/: 9,011,0 1000H.: (5,015,0) 2nd speed 1/min: 450 Del.quantity cm3/: 0,04,0
2nd speed 1/min: 1300 Charge press. hPa: 1000 Overflow : 111194 quantity cm3/10s: (96209) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 475 LDA stroke mm: 5,8 Del.quantity cm3/: 63,064,0 1000H.: (59,567,5) 2nd speed 1/min: 1600 Charge press. hPa: 1000 Del.quantity cm3/: 0,03,0 1000H.: - 3rd speed 1/min: 1540 Charge press. hPa: 1000	╌╀╼╀╼╀╸╂╸╂╸┦╌╂╸┤╸┨╸╂╸╂╸╂╸┩╸┨╸┩╸┩╸┩╸┩╸	1000H.: 03 Electr. shutoff: Speed
2nd speed 1/min: 1300 Charge press. hPa: 1000 Overflow : 111194 quantity cm3/10s: (96209) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 475 LDA stroke mm: 5,8 Del.quantity cm3/: 63,064,0 1000H.: (59,567,5) 2nd speed 1/min: 1600 Charge press. hPa: 1000 Del.quantity cm3/: 0,03,0 1000H.: - 3rd speed 1/min: 1540 Charge press. hPa: 1000 Del.quantity cm3/: 0,015,0 1000H.: -	┈┤╺╏╺╏╸╏╸╏╸╏╸┨╸ ┨╸┨╸╂╸╂╸╂╸╂╸╂╸╂╸╂╸╂╸╂╸╂╸╂╸╂╸	In the speed serving starting fuel delivery: 1000H.: 03 Electr. shutoff: Speed 1/min: 350 ELAB volt: - Del.quantity cm3/: 0,03,0 max. 1000H.: - Idle delivery: 1st speed 1/min: 350 Del.quantity cm3/: 9,011,0 1000H.: (5,015,0) 2nd speed 1/min: 450 Del.quantity cm3/: 0,04,0 1000H.: - Automatic starting fuel delivery: 1st speed 1/min: 250
2nd speed 1/min: 1300 Charge press. hPa: 1000 Overflow : 111194 quantity cm3/10s: (96209) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 475 LDA stroke mm: 5,8 Del.quantity cm3/: 63,064,0 1000H.: (59,567,5) 2nd speed 1/min: 1600 Charge press. hPa: 1000 Del.quantity cm3/: 0,03,0 1000H.: - 3rd speed 1/min: 1540 Charge press. hPa: 1000 Del.quantity cm3/: 0,015,0 1000H.: - 4th speed 1/min: 1480 Charge press. hPa: 1000	┈┤╺╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸	In the second se
2nd speed 1/min: 1300 Charge press. hPa: 1000 Overflow : 111194 quantity cm3/10s: (96209) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 475 LDA stroke mm: 5,8 Del.quantity cm3/: 63,064,0 1000H.: (59,567,5) 2nd speed 1/min: 1600 Charge press. hPa: 1000 Del.quantity cm3/: 0,03,0 1000H.: - 3rd speed 1/min: 1540 Charge press. hPa: 1000 Del.quantity cm3/: 0,015,0 1000H.: - 4th speed 1/min: 1480 Charge press. hPa: 1000 Del.quantity cm3/: 15,055,0 1000H.: - 5th speed 1/min: 1400	┈┤╌╏┈╏╌╏╌╏╌╏╌╏╌╏┈╏┈╏┈╏┈╏┈╏┈╏┈╏┈╏┈╏┈╏┈╏┈╏	Independent of the starting fuel delivery: 1st speed 1/min: 350 Del.quantity cm3/: 0,03,0 max. 1000H.: - Idle delivery: 1st speed 1/min: 350 Del.quantity cm3/: 9,011,0 1000H.: (5,015,0) 2nd speed 1/min: 450 Del.quantity cm3/: 0,04,0 1000H.: - Automatic starting fuel delivery: 1st speed 1/min: 250 Del.quantity cm3/: - ind. 1000H: 50,0 2nd speed 1/min: 400 Del.quantity cm3/: -
2nd speed 1/min: 1300 Charge press. hPa: 1000 Overflow : 111194 quantity cm3/10s: (96209) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 475 LDA stroke mm: 5,8 Del.quantity cm3/: 63,064,0 1000H.: (59,567,5) 2nd speed 1/min: 1600 Charge press. hPa: 1000 Del.quantity cm3/: 0,03,0 1000H.: - 3rd speed 1/min: 1540 Charge press. hPa: 1000 Del.quantity cm3/: 0,015,0 1000H.: - 4th speed 1/min: 1480 Charge press. hPa: 1000 Del.quantity cm3/: 15,055,0 1000H.: -	┈┤╺╏╺╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸	Individual speed 1/min: 350 Electr. shutoff: Speed 1/min: 350 ELAB volt: - Del.quantity cm3/: 0,03,0 max. 1000H.: - Idle delivery: 1st speed 1/min: 350 Del.quantity cm3/: 9,011,0 1000H.: (5,015,0) 2nd speed 1/min: 450 Del.quantity cm3/: 0,04,0 1000H.: - Automatic starting fuel delivery: 1st speed 1/min: 250 Del.quantity cm3/: - ind. 1000H: 50,0 2nd speed 1/min: 400

Cut-in

min. voltage : 20,0 Rated voltage : 24,0

Mounting and assembly dimensions:

Designation

K mm : KF mm : K-OT
MS mm : 1,2...1,6
SVS max. mm : 2,2
XK mm : 21,8...23,8
XL mm : 9,7...13,1

Remarks:

: C.D.C. # 391 2828

* Correction at adjusting nut (46)

Operate control lever after each manifold-pressure compensator pressure change.

Overflow restriction 0.75 mm - Part No. ..343,..344

Heavy-duty fuel-injection pump for DI-engines: only test using timing-device-travel measuring device with metal jacket

Note inst. in remarks column

: CUM 5,9 W31 : 18.04.90 Test sheet Edition

replaces

: ISO 4113 Calibrating oil

: VE 6/12F1400 R195-4 Injection pump

: 0 460 426 123 Type number

Customer-specific information

Customer

: 6 BT 5.9A Engine

k: 106 1/mi: 2800 Power Speed

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Openina

bar: 250...253 pressure

Perforated-plate

mm: 0.5 diameter

Test inj. tubing : 1 680 750 017

Outside diameter x Wall thickness : 2 mm: 840 x Length

Start of delivery

mm : 0.3Prestroke

(from BDC): +0.02(0.04)

Start of delivery block mm: 2,35 Piston stroke

mm: +0,02(0,06)

Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1000 Speed Charge press. hPa: 1000 Setting value mm: 2,2...2,6

Supply-pump pressure:

1/min: 1000 Speed Charge press. hPa: 1000 Setting value bar: 4,7...5,3

Full-load del. with charge press.:

Speed 1/min: 850 Charge press. hPa: 1000 Del.quantity cm3/ 1000H.: 57,0...58,0

cm3/: 4,0 Dispersion 1000H : (4,5)

Full-load del. w/out charge press.:

 $1/\min : 500$ Spead

Del.quantity cm3/

1000H.: 44,5...45,5

Low-idle speed regulation:

1/min: 375 Speed Charge press. hPa: -Del.quantity cm3/

1000H.: 6,5...10,5

cm3/: 5,5 Dispersion

1000H.: (7,0)

Full-load speed regulation:

1/min: 1520 Speed Charge press. hPa: 1000

Del.quantity cm3/ 1000H: 41,0...47,0

Start:

1/min: 100 Speed Del.quantity mind cm3/1000H.: 50.0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 850 1st speed Charge press. hPa: 1000 mm: 1,0...1,8TD travel

mm: (0,7...2,1)1/min: 1000 2nd speed

Charge press. hPa: 1000

TD travel mm: 2,22,6	∔ Charge press. hPa: 1000
mm: (1,73,1) 3rd speed 1/min: 1400 Charge press	+ Charge press. hPa: 1000 + Del.quantity cm3/: 57,058,0 + 1000H.: (54,560,5)
3rd speed 1/min: 1400	1000H.: (54,560,5)
Charge press. hPa: 1000	+ 8th speed 1/min: /UU
TD travel mm: 2,93,7	+ Charge press. hPa: 300
mm: $(2,64,0)$	+ Del.quantity cm3/: 50,051,0
	1000H: (46,554,5)
Supply-pump pressure characteristic:	+ 9th speed 1/min: 500
	+ Charge press. hPa: -
1st speed 1/min: 500	+ Del.quantity cm3/: 44,545,5
Charge press. hPa: 1000	† 1000H: (41,049,0)
Supply-pump	+
pressure bar: 4,75,3	<pre>{ Zero delivery (stop):</pre>
2nd speed 1/min: 1000	+
Charge press. hPa: 1000	- Mech. shutoff:
Supply-pump	+
pressure bar: 7,17,7 3rd speed 1/min: 1400	+ Speed 1/min: 1400
3rd speed 1/min: 1400	Del.quantity cm3/: 03 1000H.: -
Charge press. hPa: 1000	† 1000H.: -
	Ϋ
Overflow quantity at overflow valve:	Electr. shutoff:
A. L. A. L. Brown	Speed 1/min: 1400 Del.quantity cm3/: 03 1000H.: - Electr. shutoff: Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0,03,0
1st speed 1/min: 500	+ Speed 1/min: 375
Charge press. hPa: -	+ ELAB volt: -
Oveflow : 104145	Del.quantity cm3/: 0,03,0
quantity cm3/10s: (89160)	max. 1000H.: -
2nd speed 1/min: 1400	Tall and all discounts
Charge press. hPa: 1000	† Idle delivery:
Overflow : 111194	1 1st speed 1/min. 775
quantity cm3/10s: (96209)	1st speed 1/min: 375
Baldinania arranda and banadarran aban a	Del.quantity cm3/: 6,510,5 1000H.: (3,513,5)
Delivery-quant. and breakaway char.:	7 2nd annod 4/min /50
1st speed 1/min. 700t	2nd speed 1/min: 450
1st speed 1/min: 700*	Del.quantity cm3/: 0,04,0 1000H.: -
heart hear 300	Ι
Charge-air pressure-setting point hPa: 300 LDA stroke mm: 5,8	Automatic starting fuel delivery:
Del.quantity_cm3/: 50,051,0	T Adiomatic starting race decivery.
1000H.: (46,554,5)	1st speed 1/min: 230
2nd speed 1/min: 1680	Del.quantity cm3/: -
Charge press. hPa: 1000	+ ind. 1000H: 65,0
Del.quantity cm3/: 0,03,0	100011. 0370
1000H.: -	2nd speed 1/min: 400
3rd speed 1/min: 1590	Del.quantity cm3/: -
Charge press. hPa: 1000	+ max. 1000H: 65,0
Del.quantity cm3/: 15,055,0	
1000H.: -	<pre>Shutoff electromagnet:</pre>
4th speed 1/min: 1520	and an analysis of the same of
Charge press. hPa: 1000	∔ Cut-in
Del.quantity cm3/: 41,047,0	min. voltage : 20,0
1000H.: (38,050,0)	+ Rated voltage : 24,0
5th speed 1/min: 1400	+
Charge press. hPa: 1000	Mounting and assembly dimensions:
Del.quantity cm3/: 57,560,5	+
1000H.: (56,062,0)	+ Designation
6th speed 1/min: 1100	+ K rm : -
Charge press. hPa: 1000	+ KF .: K-OT
Del.quantity cm3/: 58,061,0	+ MS mm : 1,01,4
1000H.: (56,063,0)	+ SVS max. mm : 2,2
7th speed 1/min: 850	+ XK mm : 21,823,8

XL mm: 10,4...13,8

Remarks:

: C.D.C. # 391 2832

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut (46)

Overflow restriction 0.75 mm - Part No. ..343,...344

Heavy-duty fuel-injection pump for DI-engines: only test using timing-device-travel measuring device with metal jacket

Note inst. in remarks column

: CUM 5,9 W32 Test sheet : 18.04.90 **Fdition**

replaces

Calibrating oil : ISO 4113

Injection pump : VE 6/12F1400 R195-5

: 0 460 426 124 Type number

Customer-specific information

Customer : CDC

: 6 BT 5.9A Engine

k: 113 Power 1/mi: 2800 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40...48 : 42...50 electronically

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening

bar: 250...253 pressure

Perforated-plate

diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery

Prestroke mm: 0,3

(from BDC): +-0.02(0.04)

Start of delivery block mm: 2,25 Piston stroke

mm: +0,02(0,06)

Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1000 Speed Charge press. hPa: 1000 Setting value mm: 1,8...2,2

Supply-pump pressure:

1/min: 1000 Speed Charge press. hPa: 1000 Setting value bar: 5,8...6,4

Full-load del. with charge press.:

1/min: 850 Speed Charge press. hPa: 1000
Del.quantity cm3/
1000H.: 61,5...62,5

cm3/: 4,0Dispersion

1000H : (4.5)

Full-load del. w/out charge press.:

 $1/\min : 500$ Speed

Del.quantity cm3/

1000H.: 50,0...51,0

Low-idle speed regulation:

1/min: 375 Speed Charge press. hPa: -Del.quantity cm3/

1000H.: 5,0...9,0 cm3/: 5,5

Dispersion

1000H.: (7,0)

Full-load speed regulation:

1/min: 1520 Speed Charge press. hPa: 1000

Del.quantity cm3/ 1000H: 47,5...53,5

Start:

1/min: 100 Speed Del.quantity cm3/1000H.: 55.0

Inspection pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 850 1st speed Charge press. hPa: 1000

mm: 0,5...1,3 mm: (0,2...1,6) TD travel

2nd speed 1/min: 1000 Charge press. hPa: 1000

TD travel mm: 1,82,2 mm: (1,32,7) 3rd speed 1/min: 1400 Charge press. hPa: 1000 TD travel mm: 2,93,7 mm: (2,64,0) Supply-pump pressure characteristic:	+ + + +	Del.quantity cm3/: 62,065,0 1000H.: (60,067,0) 7th speed 1/min: 850 Charge press. hPa: 1000 Del.quantity cm3/: 61,562,5 1000H.: (59,065,0) 8th speed 1/min: 700 Charge press. hPa: 350
1st speed 1/min: 500 Charge press. hPa: 1000 Supply-pump pressure bar: 3,44,0 2nd speed 1/min: 1000 Charge press. hPa: 1000	+++++++++++++++++++++++++++++++++++++++	Del.quantity cm3/: 56,557,5 1000H: (53,061,0) 9th speed 1/min: 500 Charge press. hPa: - Del.quantity cm3/: 50,051,0 1000H: (46,554,5)
Supply-pump pressure bar: 5,86,4 3rd speed 1/min: 1400 Charge press. hPa: 1000	+++++++++++++++++++++++++++++++++++++++	Zero delivery (stop): Mech. shutoff: Speed 1/min: 1/00
Supply-pump pressure bar: 7,58,1	+	Speed 1/min: 1400 Del.quantity cm3/: 03 1000H.: -
Overflow quantity at overflow valve: 1st speed 1/min: 500	I	Electr. shutoff:
Charge press. hPa: - Oveflow : 104145 quantity cm3/10s: (89160) 2nd speed 1/min: 1400 Charge press. hPa: 1000 Overflow : 111194	+ + + + + + + + + + + + + + + + + + + +	Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0,03,0 max. 1000H.: - Idle delivery:
quantity cm3/10s: (96209) Delivery-quant. and breakaway char.:	†	1st speed 1/min: 375 Del.quantity cm3/: 5,09,0 1000H.: (2,012,0)
1st speed 1/min: 700* Charge-air pressure-setting point hPa: 350 LDA stroke mm: -	+	2nd speed 1/min: 450 Del.quantity cm3/: 0,04,0 1000H.: -
Del.quantity cm3/: 56,557,5 1000H.: (53,061,0)		Automatic starting fuel delivery:
2nd speed 1/min: 1700 Charge press. hPa: 1000 Del.quantity cm3/: 0,03,0 1000H.: -	+++++++++++++++++++++++++++++++++++++++	1st speed 1/min: 270 Del.quantity cm3/: - ind. 1000H: 65,0
3rd speed 1/min: 1600 Charge press. hPa: 1000 Del.quantity cm3/: 15,055,0	† †	2nd speed 1/min: 400 Del.quantity cm3/: - max. 1000H: 75,0
4th speed 1/min: 1520 Charge press. hPa: 1000 Del.quantity cm3/: 47,553,5 1000H.: (44,556,5)	T-+-+-+	Shutoff electromagnet: Cut-in min. voltage : 20,0
5th speed 1/min: 1400 Charge press. hPa: 1000	+	Rated voltage : 24,0
Del.quantity cm3/: 60,063,0 1000H.: (58,564,5)	+	Mounting and assembly dimensions:
6th speed	+	Designation K mm : - KF mm : K-OT

MS men

SVS max. mm

: 0,6...1,0 : 2,0 : 21,8...23,8 : 10,1...13,5 XK mm XL

Remarks:

: C.D.C. # 391 2834

Operate control lever after each manifold pressure compensator pressure change.

* Correction at adjusting nut (46)

Overflow_restriction 0.75 mm - Part No. ..343,..344

Heavy-duty fuel-injection pump for DI-engines: only test using timing-device-travel measuring device with metal jacket

Note inst. in remarks column

: CUM 5,9 U16 : 03.05.90 Test sheet Edition : 02.02.89 replaces Calibrating oil : ISO 4113

: VE 6/12F1050 R173-11 Injection pump

: 0 460 426 125 Type number

Customer-specific information

Customer

: 6BTA- 5.9 I Engine

k: 124 1/mi: 2100 Power Speed

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening |

bar: 250...253 pressure

Perforated-plate

mm: 0.5 diameter

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness mm: 840 x Length

Start of delivery

mm: 0.3Prestroke

(from BDC): +-0.02(0.04)

Start of delivery block mm: 1.85 Piston stroke

mm: +-0.02(0.06)

Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750 Charge press. hPa: 1000 Setting value mm: 1.5...1.9

Supply-pump pressure:

1/min: 750 Speed Charge press. hPa: 1000 Setting value bar: 2.9...3.5

Full-load del. with charge press.:

Speed 1/min: 750 Charge press. hPa: 1000

Del.quantity cm3/

1000H.: 94.5...95.5

cm3/: 4.0Dispersion 1000H: (4.5)

Full-load del. w/out charge press.:

Speed $1/\min : 500$

Del.quantity cm3/ 1000H.: 50.5...51.5

cm3/: 9.0 Dispersion 1000H .: -

Low-idle speed regulation:

1/min: 375

Del.quantity cm3/

1000H.: 8.0...12.0

cm3/: 5.5 Dispersion 1000H.: (7.0)

Full-load speed regulation:

1/min: 1100 Speed Charge press. hPa: 1000

Del.quantity cm3/ 1000H: 73.0...79.0

Start:

1/min: 100 Speed Del.quantity mind ' cm3/1000H.: 60.0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 600 1st speed Charge press. hPa: 1000

mm: 0.5...1.3 TD travel mm: (0.2...1.6)

1/min: 750 2nd speed

Charge press. hPa: 1000 TD travel mm: 1.51.9	‡	Del.quantity cm3/: 83.586.5 1000H.: (82.088.0)
mm: (1.02.4)	+	7th speed 1/min: 900
3rd speed 1/min: 1050	+	Charge press. hPa: 1000
Charge press. hPa: 1000 TD travel mm: 2.53.3	T	Del.quantity cm3/: 87.590.5 1000H.: (86.092.0)
mm: (2.23.6)	I	8th speed 1/min: 750
(ign. (2.2J.))	1	Charge press. hPa: 1000
Supply-pump pressure characteristic:	+	Del.quantity cm3/: 94.595.5
	+	1000H: (92.098.0)
1st speed 1/min: 500	+	9th speed 1/min: 500
Charge press. hPa: 1000	†	Charge press. hPa: 1000
Supply-pump	I	Del.quantity cm3/: 98.0106.0 1000H: -
pressure bar: 1.82.4 2nd speed 1/min: 750	Ţ	10th speed 1/min: 500
Charge press. hPa: 1000	+	Charge press. hPa: -
Supply-pump		Del.quantity cm3/: 50.551.5
pressure bar: 2.93.5	+	1000H: (46.555.5)
3rd speed 1/min: 1050	+	Zana daliyamy (aban)
Charge press. hPa: 1000	Ť	Zero delivery (stop):
Supply-pump pressure bar: 4.34.9	I	Mech. shutoff:
pressure bar. 4.54.7	+	Ticon. Sildest 1.
Overflow quantity at overflow valve:	+	Speed 1/min: 1050
·	+	Del.quantity cm3/: 03
1st speed 1/min: 500	+	1000H.: -
Oveflow : 4183	†	Electr chuteff.
quantity cm3/10s: (2698) 2nd speed 1/min: 1050	Ī	Electr. shutoff:
Charge press. hPa: 1000	I	Speed 1/min: 375
Overflow : 55138	+	ELAB Volt: -
quantity cm3/10s: (40153)	+	Del.quantity cm3/: 0.03.0
	+	max. 1000H.: -
Delivery-quant. and breakaway char.:	+	Tello del diversor
1st speed 1/min: 700	Ī	Idle delivery:
Charge—air pressure—setting	I	1st speed 1/min: 375
point hPa: 300	+	Del.quantity cm3/: 8.012.0
IDA stroke mm: -	+	1000H.: (5.015.0)
Del.quantity cm3/: 79.580.5 1000H.: (76.584.5)	+	2nd speed 1/min: 500
1000H.: (76.584.5)	†	Del.quantity cm3/: 0.04.0
2nd speed 1/min: 1200	Ī	1000H.: -
Charge press. hPa: 1000 Del.quantity cm3/: 0.03.0	I	Automatic starting fuel delivery:
1000H.: -	1	racomacto bear only table doctory.
3rd speed 1/min: 1170	+	1st speed 1/min: 250
Charge press. hPa: 1000	+	Del.quantity cm3/: -
Del.quantity cm3/: 0.015.0	+	ind. 1000H: 45.0
1000H.: -	Ţ	2nd speed 1/min: 450
4th speed 1/min: 1140 Charge press. hPa: 1000	I	Del.quantity cm3/: -
Del.quantity cm3/: 15.055.0	1	max. 1000H: 55.0
1000H.: -	+	
5th speed 1/min: 1100	+	Shutoff electromagnet:
Charge press. hPa: 1000	+	Cub. :-
Del.quantity cm3/: 73.079.0	T.	Cut-in min. voltage : 20.0
1000H.: (70.082.0) 6th speed 1/min: 1050	I	Rated voltage : 24.0
Charge press. hPa: 1000	1	nacea foceage . E-10

Designation

K KF mm 5.0...5.4 mm : 1.2..1.6 mm : 1.2 mm : 21,8...23,8 mm : 14,1...17,5 MS SVS max. XK

XL

Remarks:

: C.D.C. # 3 915 516

Operate control lever after each manifold pressure compensator pressure change.

* Correction at adjusting nut (46)

Heavy-duty fuel-injection pump for DI-engines: only test using timing-device-travel measuring device with metal jacket

Note inst. in remarks column

Test sheet : CUM 5,9 W33 Edition : 19.04.90

replaces

Calibrating oil : ISO 4113

: VE 6/12F1050 225-21 Injection pump

: 0 460 426 131 Type number

Customer-specific information

: CDC Customer

Engine : 6 BT

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening |

bar: 250...253 pressure

Perforated plate

mm : 0.5diameter

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm : 840

Start of delivery

Prestroke

ke mm: 0,3 (from BDC): +0,02(0,04)

Start of delivery block mm: 1,5 Piston stroke

mm: +0.02(0.06)

Outlet. : D

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 900 Setting value mm: 35...3,9 Supply-pump pressure:

1/min: 900 Setting value bar: 4,3...4,9

Full-load del. w/out charge press.:

 $1/\min : 750$ Speed

Del.quantity cm3/

1000H.: 80,5...81,5 cm3/: 4,0

Dispersion 1000H.: (4,5)

Low-idle speed regulation:

1/min: 500 Speed

Del.quantity cm3/ 1000H.: 9,0...15,0 Dispersion cm3/: 5,5 1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1100

Del.quantity cm3/ 1000H: 50,0...56,0

Start:

1/min: 100 Speed Del.quantity mind cm3/1000H.: 80,0

Inspection-pump test specifications Test specifications in parentheses

Timing device characteristic:

1/min: 750 1st speed

mm: 2,1...2,9 mm: (1,8...3,2) TD travel

1/min: 900 2nd speed

mm: 3,5...3,9 mm: (3,0...4,4) TD travel

1/min: 1050 3rd speed

mm: 4,6...5,4 mm: (4,3...5,7) TD travel

Supply-pump pressure characteristic:

1/min: 750 1st speed Supply-pump

bar: 3,7...4,3 1/min: 900 pressure

2nd speed

Supply-pump bar: 4,3...4,9 pressure

1/min: 1050 3rd speed

Automatic starting fuel delivery: Supply-pump bar: 4,9...5,5 pressure 1st speed 1/min: 130 Del.quantity cm3/: -Overflow quantity at overflow valve: 1000H: 80,0 ind. 1st speed 1/min: 500 1/min: 250 : 41...83 2nd speed Oveflow Del.quantity cm3/: -max. 1000H: 75,0 quantity cm3/10s: (26...98) 1/min: 1050 2nd speed : 55...138 Overflow quantity cm3/10s: (40...153) Shutoff electromagnet: Delivery-quant. and breakaway char .: Cut-in min. voltage 1/min: 1200 Rated voltage : 24,0 1st speed Del.quantity cm3/: 0,0...3,0 1000H.: -Mounting and assembly dimensions: 2nd speed 1/min: 1130 Del.quantity cm3/: 15,0...45,0 1000H.: -Designation K mm : 5,0...5,4 : 1,2...1,6 KF 1/min: 1100 mm 3rd speed Del.quantity cm3/: 50,0...59,0) MS mm 2,4 SVS max. ПIП 1/min: 1050 XΚ mm 4th speed Del.quantity cm3/: 65,0...68,0 1000H.: (63,5...69,5) XL mm 1/min: 900 Remarks: 5th speed Del.quantity cm3/: 69,0...73,0 1000H.: (67,0...75,0) : C.D.C. # 391 7553 Heavy-duty fuel-injection pump for 6th speed 1/min: 750
Del.quantity cm3/: 80,5...81,5 DI-engines: only test using timingdevice-travel measuring device with 1000H.: (78,0...84,0) metal jacket 1/min: 500 7th speed Del.quantity cm3/: 78,5...86,5 1000H.: (76,5...88,5) Zero delivery (stop): Mech. shutoff: 1/min: 1050 Speed Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: 1/min: 500 Speed ELAB volt: -Del.quantity cm3/: 0,0...3,0 1000H.: -Idle delivery: 1/min: 500 1st speed Del.quantity cm3/: 9,0...15,0 1000H.: (7,0...17,0) 2nd speed 1/min: 560
Del.quantity cm3/: 0,0...4,0
1000H.: -

Note inst. in remarks column

Test sheet : CUM 5,9 W34 Edition : 19.04.90 replaces

Calibrating oil : ISO 4113

: VE 6/12F1100 R225-22 Injection pump

Type number : 0 460 426 132

Customer-specific information

Customer : CDC

: 6 BT Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

bar: 250...253 pressure

Perforated plate

mm: 0.5 diameter

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

Prestroke mm: 0,3 (from BDC): +0,02(0,04)

Start of delivery block mm: 1,85 Piston stroke

mm: +0,02(0,06)

Outlet. : D

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900 Setting value mm: 2,4...2,8

Supply-pump pressure:

1/min: 900 Speed

Setting value bar: 3,8...4,4

Full-load del. w/out charge press.:

1/min : 750

Del.quantity cm3/

1000H.: 92,0...93,0

cm3/: 4,0Dispersion

1000H.: (4,5)

Low-idle speed regulation:

1/min: 400 Speed

Del.quantity cm3/ 1000H.: 7,0...13,0

Full-load speed regulation:

Speed 1/min: 1190

Del.quantity cm3/

1000H: 15,0...25,0

Start:

1/min: 100 Speed

Del.quantity

cm3/1000H.: 70,0 mind

Inspection pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750

mm: 1,3...2,1 mm: (1,0...2,4) 1/min: 900 TD travel

2nd speed

mm: 2,4...2,8 mm: (1,9...3,3) TD travel

1/min: 1100 3rd speed

mm: 3,0...3,8 TD travel

mm: (2,7...4,1)

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

bar: 2,2...2,8 1/min: 750 pressure

2nd speed

Supply-pump

bar: 3,2...3,8 1/min: 900 pressure

3rd speed

Supply-pump

bar: 3,8...4,4 1/min: 1100 pressure

4th speed

Supply-pump bar: 4,6...5,2 pressure Overflow quantity at overflow valve: 1/min: 500 1st speed : 41...83 Oveflow cm3/10s: (26...98) quantity 1/min: 1100 2nd speed : 55...138 Overflow quantity cm3/10s: (40...153) Delivery-quant. and breakaway char .: 1st speed Del.quantity cm3/: 0 1000H.: -1/min: 1250 1st speed cm3/: 0,0...3,0 1/min: 1230 cm3/: 0,0...15,0 2nd speed Del.quantity 1000H.: -1/min: 1190 Del.quantity cms/: 1000H.: 3rd speed cm3/: 15,0...25,0 4th speed 1/min: 1100
Del.quantity cm3/: 75,0...78,0
1000H.: (73,5...79,5) 1/min: 900 5th speed Del.quantity cm3/: 80,5...85,5) 6th speed 1/min: 750
Del.quantity cm3/: 92,0...93,0
1000H.: (89,5...95,5) 1/min: 500 7th speed Del.quantity cm3/: 91,0...101,0 1000H.: (90,0...102,0) Zero delivery (stop): Mech. shutoff: 1/min: 1100 Speed Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: 1/min: 400 Speed ELAB volt: -Del.quantity cm3/: 0,0...3,0 1000H.: max.

Automatic starting fuel delivery: 1/min: 130 1st speed Del.quantity cm3/: -1000H: 70,0 ind. Shutoff electromagnet: Cut-in : 10,0 min. voltage : 12,0 Rated voltage Mounting and assembly dimensions: Designation Κ KF 5,1...5,5 mm MS : 0,8...1,2 mm : 2,2 : 18,8...20,8 SVS max. mm XK mm XL mm : 11,9...15,3 Remarks: : C.D.C. # 391 9458 Heavy-duty fuel-injection pump for DI-engines: only test using timingdevice-travel measuring device with metal jacket

Idle delivery:

1/min: 400

1/min: 470

Del.quantity cm3/: 7,0...13,0 1000H.: (5,0...15,0)

Del.quantity cm3/: 0,0...4,0 1000H.: -

1st speed

2nd speed

Note inst. in remarks column

: CUM 5,9 W41 Test sheet Edition : 03.05.90

replaces

Calibrating oil : ISO 4113

Injection pump : VE 6/12F1100 R225-22

: 0 460 426 132 Type number Customer Part-No.: 3 917 009

Customer-specific information

Customer : CDC

: 6 BT Engine

k: 119 Power 1/mi: 2200 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

bar: 250...253 pressure

Perforated-plate

diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

mm : 0.3Prestroke

(from BDC): +-0.02(0.04)

Start of delivery block mm: 1,85 Piston stroke

mm: +-0.02(0.06)

Outlet.

Injection-pump setting values Test specifications in parentheses Timing-device travel:

1/min: 900

Setting value mm: 2,4...2,8

Supply-pump pressure:

Speed 1/min: 900 Setting value bar: 3,8...4,4

Full-load del. w/out charge press.:

1/min : 750 Speed

Del.quantity cm3/

1000H.: 92,0...93,0 cm3/: 4,0

Dispersion

1000H.: (4,5)

Low-idle speed regulation:

1/min: 400 Speed

Del.quantity cm3/ 1000H.: 7,0...13,0

Full-load speed regulation:

1/min: 1190 Speed

Del.quantity cm3/

1000H: 15,0...25,0

Start:

1/min: 100 Speed

Del.guantity cm3/1000H.: 70,0 mind i

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750

mm: 1,3...2,1 mm: (1,0...2,4) TD travel

1/min: 900 2nd speed

TD travel

mm: 2,4...2,8 mm: (1,9...3,3)

1/min: 1100 3rd speed TD travel

mm: 3,0...3,8 mm: (2,7...4,1)

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

bar: 2,2...2,8 1/min: 750 pressure

2nd speed Supply-pump

bar: 3,2...3,8 pressure

1/min: 900 3rd speed Supply-pump bar: 3,8...4,4 1/min: 1100 pressure 4th speed Supply-pump bar: 4,6...5,2 pressure Overflow quantity at overflow valve: 1/min: 500 1st speed : 41...83 Oveflow cm3/10s: (26...98) quantity 1/min: 1100 2nd speed : 55...138 Overflow quantity cm3/10s: (40...153) Delivery-quant. and breakaway char .: 1st speed 1/min: 1250 Del.quantity cm3/: 0,0...3,0 1000H .: -1/min: 1230 2nd speed Del.quantity cm3/: 0,0...15,0 1000H.: -1/min: 1190 3rd speed Del.quantity cm3/: 15,0...25,0 1000H.: -4th speed 1/min: 1100 Del.quantity cm3/: 75,0...78,0 1000H.: (73,5...79,5) 1/min: 900 5th speed Del.quantity cm3/: 80,5...83,5 1000H.: (78,5...85,5) 6th speed 1/min: 750 cm3/: 92,0...93₂0 Del.quantity 1000H.: (89,5...95,5) 1/min: 500 7th speed Del.quantity cm3/: 91,0...101,0 1000H.: (90,0...102,0) Zero delivery (stop): Mech. shutoff: Speed 1/min: 1100 Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: 1/min: 400 Speed ELAB volt: -Del.quantity cm3/: 0,0...3,0 max. 1000H.: -Idle delivery:

2nd speed 1/min: 470
Del.quantity cm3/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130 Del.quantity cm3/: ind. 1000H: 70,0

Shutoff electromagnet:

Cut-in

min. voltage : 20,0 Rated voltage : 24,0

Mounting and assembly dimensions:

Designation

KF mm : KF mm : 5,1...5,5
MS mm : 0,8...1,2
SVS max. mm : 2,2
XK mm : 18,8...20,8
XL mm : 11,9...15,3

Remarks:

Note inst. in remarks column

: CUM 5,8 W38 Test sheet : 24.04.90 Edition

replaces

: ISO 4113 Calibrating oil

Injection pump : VE 6/12F1250 R320-2

: 0 460 426 139 Type number

Customer-specific information

: CDC Customer

Engine : 6 BT

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Openina .

bar: 250...253 pressure

Perforated-plate

mm : 0.5diameter

Test ini. tubing : 1 680 750 017

: 6 Outside diameter x Wall thickness : 2 mm: 840 x Length

Start of delivery Prestroke mm : -(from BDC): -

Start of delivery block Piston stroke mm: 0,4

mm: +0.02(0.06)

Outlet

Injection pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1100 Charge press. hPa: 1200 Setting value mm: 1,3...1,7

KSB solenoid-operated valve valt: 12,0

Supply-pump pressure:

1/min: 1100 Charge press. hPa: 1200

Setting value bar: 6,8...7,4 KSB solenoid-operated

volt: 12,0 valve

Full-load del. with charge press.:

1/min: 1100 Speed Charge press. hPa: 1200 Del.quantity cm3/ 1000H.: 73,0...74,0

KSB solenoid-operated volt: 12,0 valve cm3/:4,0Dispersion 1000H: (4,5)

Full-load del. w/out charge press.:

Speed 1/min : 500

Del.quantity cm3/ 1000H.: 51,0...52,0

Dispersion cm3/: ~

1000H.: (9,0)

Low-idle speed regulation:

Speed 1/min: 350 Charge press. hPa: -

Del.quantity cm3/ 1000H.: 5,5...9,5

KSB solenoid-operated

volt: 12,0 cm3/: 5,5 1000H.: (7,0) valve Dispersion

Full-load speed regulation:

Speed 1/min: 1340 Charge press. hPa: 1200

Del.quantity cm3/

1000H: 52,5...58,5

KSB solenoid-operated valve volt: 12,0

Start:

1/min: 100 Speed Del.quantity

mind cm3/1000H.: 70,0 KSB solenoid-operated

volt: 12,0

Inspection-pump test specifications

Test specifications in parentheses	+	Charge press. hPa: 1200
	+	KSB solenoid-operated
Timing-device characteristic:	T	valve volt: 12,0
	T	Overflow : 55138 quantity cm3/10s: (40153)
1-4 1/ /504	T	qualitity this rus. (40155)
1st speed 1/min: 450*	T	Doldwary grant and brooksysy chan
Charge press. hPa: -	†	Delivery-quant. and breakaway char.
TD travel mm: 3,04,0	T	1st smand 1/min. 700
mm: -	T	1st speed 1/min: 700
KSB solenoid-operated	T	Charge-air pressure-setting point hPa: 700
valve volt: -	Ť	point hPa: 700 LDA stroke mm: 6,8
2nd speed 1/min: 1000	T	
Charge press. hPa: 1200	T	KSB solenoid-operated valve volt: 12,0
TD travel mm: 0,51,3	T	Del.quantity cm3/: 68,069,0
140. (0)/2/0/	T	1000H.: (64,572,5)
KSB solenoid-operated	Ι	2nd speed 1/min: 1550
valve volt: 12,0 3rd speed 1/min: 1100	Ι	Charge press. hPa: 1200
Change broom hPos 1200	Τ	KSB solenoid-operated
Charge press. hPa: 1200	I	valve volt: 12,0
TD travel mm: 1,31,7	T	Del.quantity cm3/: 0,03,0
mm: (0,82,2)	T	1000H.: -
KSB solenoid-operated	T	3rd speed 1/min: 1400
valve volt: 12,0 4th speed 1/min: 1250	T	Charge press. hPa: 1200
Charge phase blas 1200	T	KSB solenoid-operated
Charge press. hPa: 1200	T	valve volt: 12,0
TD travel mm: 2,23,0	T	Del.quantity cm3/: 15,055,0
mm: (1,93,3)	T	1000H.: -
KSB solenoid-operated	I	4th speed 1/min: 1340
valve volt: 12,0	T	Charge press. hPa: 1200
Supply-pump pressure characteristic:	I	KSB solenoid-operated
supply-pump pressure than acter istro.	Ι	valve volt: 12 fl
1st speed 1/min: 500	I	valve volt: 12,0 Del.quantity cm3/: 52,558,5 1000H.: (49,561,5)
Charge press. hPa: 1200	\mathbf{I}	1000H · (49 5 41 5)
	Ι	5th speed 1/min: 1250
Supply-pump pressure bar: 4,14,7	Ι	Charge press. hPa: 1200
KSB solenoid-operated	1	KSB solenoid-operated
valve volt: 12,0	I	valve volt: 12,0
2nd speed 1/min: 1100	1	Del quantity cm3/: 70.5 73.5
Charge press. hPa: 1200	1	Del.quantity cm3/: 70,573,5 1000H.: (69,075,0)
Supply-pump	1	6th speed 1/min: 1100
pressure bar: 6,87,4	1	Charge press. hPa: 1200
KSB solenoid-operated	1	KSB solenoid-operated
valve volt: 12,0	↓.	valve volt: 12,0
3rd speed 1/min: 1250	1	Del.quantity cm3/: 73,074,0
Charge press. hPa: 1200	1	1000H.: (70,576,5)
Supply-pump	1	7th speed 1/min: 750
pressure bar: 7,58,1	1	Charge press. hPa: 1200
KSB solenoid-operated	1	KSB solenoid-operated
valve volt: 12,0	1	valve volt: 12,0
Vacve	1	Del.quantity cm3/: 72,077,0
Overflow quantity at overflow valve:	1	1000H.: (70,079,0)
Total I com qualities at over 1 con 1 con 1	1	8th speed 1/min: 700
1st speed 1/min: 500	+	Charge press. hPa: 700
Charge press. hPa: -	1	KSB solenoid-operated
KSB solenoid-operated	+	valve volt: 12,0
valve volt: 12,0	+	Del.quantity cm3/: 68,069,0
Oveflow : 4183	+	1000H: (64,572,5)
quantity cm3/10s: (2698)	+	9th speed 1/min: 500
2nd speed 1/min: 1250	+	Charge press. hPa: -

KSB solenoid-operated

valve

volt: 12,0 cm3/: 51,0...52,0 1000H: (47,5...55,5) Del.quantity

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1250 Del.quantity cm3/: 0..3

1000н.: -

Electr. shutoff:

1/min: 350 Speed

ELAB volt: -

Del.quantity cm3/: 0,0...3,0

1000H.: -

Idle delivery:

1st speed 1/min: 350

KSB solenoid operated

volt: 12,0 valve

Del.quantity cm3/: 5,5...9,5 1000H.: (2,5...12,5) 2nd speed 1/min: 450

2nd speed

KSB solenoid-operated

volt: 12,0

Del.quantity cm3/: 0,0...4,0

1000H .: -

Automatic starting fuel delivery:

1/min: 130 1st speed

KSB solenoid-operated

volt: 12,0 valve

Del.quantity cm3/: -

1000H: 70,0 ind.

2nd speed 1/min: 250

KSB solenoid operated

volt: 12,0 valve

Del.quantity cm3/: -

1000H: 50,0 max.

Shutoff electromagnet:

Cut-in

min. voltage : 10,0

: 12,0 Rated voltage

Mounting and assembly dimensions:

Designation

: 3,6...3,8 K mm

KF : K-0T mm

: 0,8...1,2 MS

: 1,4 SVS max. mm

Remarks:

: C.D.C. # 391 7943

Operate control lever after each manifold pressure compensator pressure change.

- * Correction at adjusting nut (46)
- * Unscrew KSB ball valve 2 mm

Note inst. in remarks column

: CUM 5,8 W39 Test sheet : 24.04.90 Edition

replaces

Calibrating oil : ISO 4113

: VE 6/12F1250 R320-2 Injection pump

Type number : 0 460 426 139 Customer Part-No. : 3 916 896

Customer-specific information

: CDC Customer

Engine : 6 BT

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40...48 : 42...50 electronically

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

bar: 250...253 pressure

Perforated plate

mm: 0.5 diameter

Test inj. tubing : 1 680 750 017

Outside diameter x Wall thickness : 2 mm: 840 x Length

Start of delivery mm : -Prestroke (from BDC): -

Start of delivery block Piston stroke mm: 0.4

mm: +0,02(0,06)

: D Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1100 Speed

Charge press. hPa: 1200 Setting value mm: 1,3...1,7 KSB solenoid-operated

valve volt: 12,0

Supply-pump pressure:

1/min: 1100 Speed Charge press. hPa: 1200 Setting value bar: 6,8...7,4

KSB solenoid-operated valve volt: 12,0

Full-load del. with charge press.:

1/min: 1100 Charge press. hPa: 1200

Del.quantity cm3/ 1000H.: 73,0...74,0

KSB solenoid-operated volt: 12,0 cm3/: 4,0 valve Dispersion 1000H : (4,5)

Full-load del. w/out charge press.:

 $1/\min : 500$ Speed

Del.quantity cm3/

1000H.: 51,0...52,0

cm3/: -Dispersion

1000H.: (9,0)

Low-idle speed regulation:

1/min: 350 Speed Charge press. hPa: -Del.quantity cm3/ 1000H.: 5,5...9,5

KSB solenoid-operated volt: 12,0 valve cm3/: 5,5 Dispersion 1000H.: (7,0)

Full-load speed regulation:

1/min: 1340 Speed Charge press. hPa: 1200 Del.quantity cm3/ 1000H: 52,5...58,5

KSB solenoid-operated volt: 12,0 valve

Start:

1/min: 100 Speed Del.quantity cm3/1000H.: 70,0 KSB solenoid-operated volt: 12,0 valve

Inspection-pump test specifications Test englishment in parentheses	+ Charge press. hPa: 1200
Test specifications in parentheses	+ KSB solenoid-operated
Timing-device characteristic:	+ valve volt: 12,0
Thinking device ondicated roots.	+ Overflow : 55138
	quantity cm3/10s: (40153)
1st speed 1/min: 450*	+
Charge press. hPa: -	+ Delivery-quant. and breakaway char.
TD travel mm: 3,04,0	+
mm: —	+ 1st speed 1/min: 700
KSB solenoid-operated	+ Charge-air pressure-setting
valve volt: -	+ point hPa: 700
2nd speed 1/min: 1000	+ LDA stroke mm: 6,8 + KSB solenoid-operated
Charge press. hPa: 1200	+ valve volt: 12,0
TD travel mm: 0,51,3 mm: (0,,21,6)	Del.quantity cm3/: 68,069,0
KSB solenoid-operated	1000H.: (64,572,5)
valve volt: 12,0	2nd speed 1/min: 1550
3rd speed 1/min: 1100	- Charge press. hPa: 1200
Charge press. hPa: 1200	+ KSB solenoid-operated
TD travel mm: 1,31,7	+ valve volt: 12,0
mm: (0,82,2)	Del.quantity cm3/: 0,03,0 + 1000H.: -
KSB solenoid-operated	+ 1000H.: -
valve volt: 12,0	+ 3rd speed 1/min: 1400
4th speed 1/min: 1250	+ Charge press. hPa: 1200
Charge press. hPa: 1200	+ KSB solenoid-operated
TD travel mm: 2,23,0	+ valve volt: 12,0
mm: (1,93,3)	Del.quantity cm3/: 15,055,0 1000H.: -
KSB solenoid-operated valve volt: 12,0	4th speed 1/min: 1340
valve vocc. 12,0	Charge press. hPa: 1200
Supply-pump pressure characteristic:	+ KSB solenoid-operated
ouppey pump pressure offer dover forth.	+ valve volt: 12,0
1st speed 1/min: 500	+ Del.quantity cm3/: 52,558,5
Charge press. hPa: 1200	Del.quantity cm3/: 52,558,5 1000H:: (49,561,5)
Supply-pump	+ 5th speed 1/min: 1250
pressure bar: 4,14,7	+ Charge press. hPa: 1200
KSB solenoid operated	+ KSB solenoid-operated
valve volt: 12,0	+ valve volt: 12,0
2nd speed 1/min: 1100	Del.quantity cm3/: 70,573,5 1000H.: (69,075,0)
Charge press. hPa: 1200	f 6th speed 1/min: 1100
Supply-pump pressure bar: 6,87,4	Charge press. hPa: 1200
KSB solenoid-operated	+ KSB solenoid-operated
valve volt: 12,0	+ valve volt: 12,0
3rd speed 1/min: 1250	+ Del.quantity cm3/: 73,074,0
Charge press. hPa: 1200	1000H.: (70,576,5)
Supply-pump	+ 7th speed 1/min: 750
pressure bar: 7,58,1	+ Charge press. hPa: 1200
KSB solenoid-operated	+ KSB solenoid-operated
valve volt: 12,0	+ valve volt: 12,0
	Del.quantity cm3/: 72,077,0
Overflow quantity at overflow valve:	1000H.: (70,079,0) + 8th speed 1/min: 700
1st speed 1/min: 500	+ 8th speed 1/min: 700 + Charge press. hPa: 700
1st speed 1/min: 500 Charge press. hPa: -	KSB solenoid-operated
KSB solenoid-operated	+ valve volt: 12,0
valve volt: 12,0	+ Del.quantity cm3/: 68,069,0
Oveflow : 4183	1000H: (64,572,5)
quantity cm3/10s: (2698)	+ 9th speed 1/min: 500

Charge press. hPa: -KSB solenoid-operated

volt: 12,0 valve

Del.quantity cm3/: 51,0...52,0 1000H: (47,5...55,5)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1250 Del.quantity cm3/: 0..3 1000H.: -

Electr. shutoff:

1/min: 350 Speed ELAB volt: -

Del.quantity cm3/: 0,0...3,0

max.

1000H.: -

Idle delivery:

1st speed 1/min: 350

KSB solenoid-operated

valve volt: 12,0 Del.quantity cm3/: 5,5...9,5 1000H.: (2,5...12,5)

1/min: 450 2nd speed

KSB solenoid-operated

volt: 12,0 valve

Del.quantity cm3/: 0,0...4,0 1000H.: -

Automatic starting fuel delivery:

1/min: 130 1st speed

KSB solenoid-operated

volt: 12,0 valve

Del.quantity cm3/: -

1000H: 70,0 ind.

1/min: 250 2nd speed

KSB solenoid-operated

volt: 12,0 valve

Del.quantity cm3/: -max. 1000H: 50,0

Shutoff electromagnet:

Cut-in

: 10,0 min. voltage : 12,0 Rated voltage

Mounting and assembly dimensions:

Designation

mm : 3,6...3,8K

KF mm : K-OT

: 0,8...1,2 MS mm

SVS max. mm : 1.4

Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

- * Correction at adjusting nut (46)
- * Unscrew KSB ball valve 2 mm

Note inst. in remarks column

: CUM 5,8 W40 Test sheet Edition : 24.04.90

replaces

Calibrating oil : ISO 4113

Injection pump : VE 6/12F1250 R320-2

Type number : 0 460 426 139 Customer Part-No. : 3 916 897

Customer-specific information

Customer : CDC

Engine : 6 BT

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40...48 : 42...50 electronically

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

bar: 250...253 pressure

Perforated plate

diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Lenath

Start of delivery Prestroke (from BDC): -

Start of delivery block Piston stroke mm: 0,4

mm: +-0.02(0.06)

Outlet : D

Injection—pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1100 Speed

Charge press. hPa: 1200 Setting value mm: 1,3...1,7 KSB solenoid-operated

volt: 24,0 valve

Supply-pump pressure:

1/min: 1100 Speed Charge press. hPa: 1200 Setting value bar: 6,8...7,4

KSB solenoid-operated volt: 24,0

Full-load del. with charge press.:

1/min: 1100 Charge press. hPa: 1200 Del.quantity cm3/ 1000H: 73,0...74,0

KSB solenoid-operated volt: 24,0 cm3/: 4,0Dispersion 1000H : (4,5)

Full-load del. w/out charge press.:

1/min: 500

Del.quantity cm3/ 1000H.: 51,0...52,0

KSB solenoid-operated valve volt: 24,0 Dispersion cm3/: -1000H.: (9,0)

Low-idle speed regulation:

Speed 1/min: 350 Charge press. hPa: -Del.quantity cm3/ 1000H.: 5,5...9,5

KSB solenoid-operated volt: 24,0 cm3/: 5,5 valve Dispersion 1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1340 Charge press. hPa: 1200

Del.quantity cm3/

1000H: 52,5...58,5

KSB solenoid-operated volt: 24,0 valve

Start:

1/min: 100 Speed Del.quantity mind cm3/1000H.: 70,0

KSB solenoid-operated valve volt: 24,0	‡	KSB solenoid-operated valve volt: 24,0
· ·	+	Oveflow : 4183
Inspection pump test specifications	+	quantity cm3/10s: (2698)
Test specifications in parentheses	1	2nd speed 1/min: 1250
1000 open i tout in in par a in ord	i	Charge press. hPa: 1200
Timing-device characteristic:	1	KSB solenoid-operated
I mining device and december.	T	
	T	valve volt: 24,0
1 to amount 1/min (50)	Ť	Overflow : 55138
1st speed 1/min: 450*	+	quantity cm3/10s: (40153)
Charge press. hPa: -	+	
TD travel mm: 3,04,0	+	Delivery-quant. and breakaway char.
mm: —	+	
KSB solenoid-operated	+	1st speed 1/min: 700
valve volt: -	+	Charge-air pressure-setting
2nd speed 1/min: 1000	+	point hPa: 700
Charge press. hPa: 1200	1	LDA stroke mm: 6,8
TD travel mm: 0,51,3	1	KSB solenoid-operated
mm: (0,,21,6)	\perp	valve volt: 24,0
	T	hal guantity and/: 62 A 60 A
KSB solenoid-operated	T	Del.quantity cm3/: 68,069,0
valve volt: 24,0	+	1000H.: (64,572,5)
3rd speed 1/min: 1100	+	2nd speed 1/min: 1550
Charge press. hPa: 1200	+	Charge press. hPa: 1200
TD travel mm: 1,31,7	+	KSB solenoid-operated
mm: (0,82,2)	+	valve volt: 24,0
KSB solenoid-operated	+	Deliguantity cm3/: 0,03,0
valve volt: 24,0	+	Del.quantity cm3/: 0,03,0 1000H.: -
4th speed 1/min: 1250	1	3rd speed 1/min: 1400
Charge press. hPa: 1200	\perp	Charge press. hPa: 1200
TD travel mm: 2,23,0	\mathbf{I}	KSB solenoid-operated
10 travet (10, 2,23)0	Ţ	Nob Societio tu operated
mm: (1,93,3)	T	valve volt: 24,0
KSB solenoid-operated	+	Del.quantity cm3/: 15,055,0 1000H.: -
valve volt: 24,0	+	1000H.: -
	+	4th speed 1/min: 1340
Supply-pump pressure characteristic:	+	Charge press. hPa: 1200
	+	KSB solenoid-operated
1st speed 1/min: 500	+	valve volt: 24,0
Charge press. hPa: 1200	+	Del.quantity cm3/: 52,558,5 1000H.: (49,561,5)
Supply-pump	1	1000H.: (49,5,61,5)
pressure bar: 4,14,7	1	5th speed 1/min: 1250
KSB solenoid-operated	1	Charge press. hPa: 1200
valve volt: 24,0	1	KSB solenoid-operated
2nd speed 1/min: 1100	T	valve volt: 24,0
	T	
Charge press. hPa: 1200	T	Del.quantity cm3/: 70,573,5
Supply-pump	Ť	1000H.: (69,075,0)
pressure bar: 6,87,4	†	6th speed 1/min: 1100
KSB solenoid-operated	+	Charge press. hPa: 1200
valve volt: 24,0	+	KSB solenoid-operated
3rd speed 1/min: 1250	+	valve volt: 24,0
Charge press. hPa: 1200	+	Del.quantity cm3/: 73,074,0
Supply-pump	+	1000H.: (70,576,5)
pressure bar: 7,58,1	+	7th speed 1/min: 750
KSB solenoid-operated	+	Charge press. hPa: 1200
valve volt: 24,0	1	KSB solenoid-operated
total total mills	1	valve volt: 24,0
Overflow quantity at overflow valve:	1	Del.quantity cm3/: 72,077,0
Over I tow quarterty at over 1 tow valve.	I	10001 (70 0 70 0)
1st aread 1/mins 500	T	1000H.: (70,079,0)
1st speed 1/min: 500	T	8th speed 1/min: 700
Charge press. hPa: -	Ť	Charge press. hPa: 700
	+	

KSB solenoid-operated volt: 24,0 valve cm3/: 68,0...69,0 Del.quantity 1000H: (64,5...72,5) 1/min: 500 9th speed Charge press. hPa: -KSB solenoid-operated valve volt: 24,0 Del.quantity cm3/: 51,0...52,0 1000H: (47,5...55,5)

Zero delivery (stop):

Mech. shutoff:

1/min: 1250 Speed Del.quantity cm3/: 0..3 1000H.: -

Electr. shutoff:

1/min: 350 Speed ELAB volt: -Del.quantity cm3/: 0,0...3,0 max. 1000H.: -

Idle delivery:

1/min: 350 1st speed KSB solenoid-operated valve volt: 24,0
Del.quantity cm3/: 5,5...9,5
1000H.: (2,5...12,5) 1/min: 450 2nd speed KSB solenoid-operated volt: 24,0 Del.quantity cm3/: 0,0...4,0 1000H.: -

Automatic starting fuel delivery:

1/min: 130 1st speed KSB solenoid-operated valve volt: 24,0 Del.quantity cm3/: -1000H: 70,0 ind.

1/min: 250 2nd speed KSB solenoid-operated volt: 24,0 valve Del.quantity_cm3/: -1000H : 50,0

Shutoff electromagnet:

Cut-in

: 10,0 min. voltage Rated voltage

Mounting and assembly dimensions:

Designation

mm : 3,6...3,8K KF mm : K-OT : 0,8...1,2 MS mm SVS max. mm

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut (46)

* Unscrew KSB ball valve 2 mm

Note inst. in remarks column

: CUM 5,9 U41 Test sheet Edition : 04.05.90

replaces

: ISO 4113 Calibrating oil

Injection pump : VE 6/12F1250 R373

: 0 460 426 142 Type number Customer Part-No.: 3 917 003

Customer-specific information Customer : CUMMINS

: 6 BTA Engine

TEST BENCH REQUIREMENTS

Calibrating oil return temp.

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening |

bar: 250...253 pressure

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter x Wall thickness : 2 mm: 840 x Length

Start of delivery

mm : 0.3Prestroke

(from BDC): +-0.02(0.04)

Start of delivery block

mm: 1,85 Piston stroke

mm: +0,02(0,06)

Outlet : D

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 750 Speed

Charge press. hPa: 1000 Setting value mm: 1,3...1,7

Supply-pump pressure:

Speed 1/min: 750 Charge press. hPa: 1000 Setting value bar: 3,2...3,8

Full-load del. with charge press.:

Speed 1/min: 750 Charge press. hPa: 1000 Del.quantity cm3/

1000H.: 84,5...85,5

cm3/:4,0Dispersion 1000H : (4,5)

Full-load del. w/out charge press.:

1/min: 500 Speed

Del.quantity cm3/ 1000H.: 68,5...69,5

Low-idle speed regulation:

1/min: 375 Charge press. hPa: -Del.quantity cm3/

1000H.: 8,0...14,0 cm3/: 5,5

Dispersion 1000H.: (7,0)

Full-load speed regulation:

1/min: 1300 Speed Charge press. hPa: 1000

Del.quantity cm3/

1000H: 59,0...65,0

Start:

1/min: 100 Speed Del.quantity cm3/1000H.: 70,0 mind

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 600 1st speed Charge press. hPa: 1000

mm: 0,4...1,2 mm: (0,1...1,5) TD travel

2nd speed 1/min: 750

Charge press. hPa: 1000 TD travel mm: 1,3...1,7 mm: (0,8...2,2)

3rd speed 1/min: 1050 Charge press. hPa: 1000 TD travel mm: 2,02,8 mm: (1,73,1)	Charge press. hPa: 1000 Del.quantity cm3/: 80,583,5 1000H.: (78,585,5) 8th speed 1/min: 750 Charge press. hPa: 1000
Supply-pump pressure characteristic:	- Del.quantity cm3/: 84,585,5 1000H: (82,088,0)
1st speed 1/min: 500 Charge press. hPa: 1000 Supply-pump pressure bar: 2,22,8 2nd speed 1/min: 750 Charge press. hPa: 1000 Supply-pump pressure bar: 3,23,8 3rd speed 1/min: 1050 Charge press. hPa: 1000 Supply-pump pressure bar: 4,55,1	9th speed 1/min: 700 Charge press. hPa: 400 Del.quantity cm3/: 77,578,5 1000H: (74,082,0) 10th speed 1/min: 500 Charge press. hPa: 1000 Del.quantity cm3/: 84,092,0 1000H: - 11th speed 1/min: 500 Charge press. hPa: - Del.quantity cm3/: 68,569,5 1000H: (65,073,0)
Overflow quantity at overflow valve:	Zero delivery (stop):
1st speed 1/min: 500	- Mech. shutoff:
Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1250	- Speed 1/min: 1250 - Del.quantity cm3/: 03 - 1000H.: -
Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153)	- Electr. shutoff:
Delivery-quant. and breakaway char.: 1st speed	- Speed 1/min: 375 - ELAB volt: - - Del.quantity cm3/: 0,03,0 - max. 1000H.: -
point hPa: 400	- Idle delivery:
LDA stroke mm: 5,0 Del.quantity cm3/: 77,578,5 1000H.: (74,082,0) 2nd speed 1/min: 1400 Charge press. hPa: 1000 Del.quantity cm3/: 0,03,0 1000H.: -	- 1st speed 1/min: 375 - Del.quantity cm3/: 8,014,0 - 1000H.: (6,016,0) - 2nd speed 1/min: 500 - Del.quantity cm3/: 0,04,0 1000H.: -
3rd speed	- Automatic starting fuel delivery:
Del.quantity cm3/: 0,015,0 1000H.: - 4th speed 1/min: 1330 Charge press. hPa: 1000 Del.quantity cm3/: 15,055,0	- 1st speed 1/min: 250 - Charge press. hPa: - - Del.quantity cm3/: - - ind. 1000H: 70,0
5th speed 1/min: 1300 Charge press. hPa: 1000 Del.quantity cm3/: 59,065,0 1000H.: (56,068,0) 6th speed 1/min: 1250	2nd speed 1/min: 450 - Charge press. hPa: - - Del.quantity cm3/: - - max. 1000H: 88,0
Charge press. hPa: 1000 Del.quantity cm3/: 76,079,0	Shutoff electromagnet:
1000H.: (74,580,5) 7th speed	- Cut-in - min. voltage : 20,0

Rated voltage : 24,0

Mounting and assembly dimensions:

Designation

K mm : KF mm : 5,0...5,4
MS mm : 1,0...1,4
SVS max. mm : 2,0
XK mm : 21,8...23,8
XL mm : 13,8...17,2

Remarks:

* Correction at adjusting nut (46)

Operate control lever after each manifold-pressure compensator pressure change.

Note inst. in remarks column

: CUM 5,9 U44 : 04.05.90 Test sheet Edition

replaces

Calibrating oil : ISO 4113

Injection pump : VE 6/12F1250 R373

Type number : 0 460 426 142 Customer Part-No. : 3 917 017

Customer-specific information : CUMMINS Customer ______

Engine

: 6 BTA

Power Speed k: 131

1/mi: 2400

TEST BENCH REQUIREMENTS

Calibrating oil return temp.

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

assembly

: 1 688 901 027

Opening.

bar: 250...253 pressure

Perforated plate

mm: 0.5 diameter

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

Prestroke mm : 0.3

(from BDC): +-0.02(0.04)

Start of delivery block mm: 1,85 Piston stroke

mm: +0,02(0,06)

Outlet

Injection-pump setting values Test specifications in parentheses Timing-device travel:

1/min: 750 Charge press. hPa: 1000 Setting value mm: 1,3...1,7

Supply-pump pressure:

1/min: 750 Speed Charge press. hPa: 1000 Setting value bar: 3,2...3,8

Full-load del. with charge press.:

1/min: 750 Speed Charge press. hPa: 1000 Del.quantity cm3/ 1000H.: 89,5...90,5

cm3/:4,0Dispersion 1000H : (4,5)

Full-load del. w/out charge press.:

1/min : 500 Speed Del.quantity cm3/

1000H.: 65,0...66,0

Low-idle speed regulation:

1/min: 375 Speed Charge press. hPa: -Del.quantity cm3/ 1000H.: 8,0...14,0

cm3/: 5,5 Dispersion 1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1260 Charge press. hPa: 1000

Deliquantity cm3/

1000H: 69,5...75,5

Start:

1/min: 100 Speed Del.quantity cm3/1000H.: 40,0 mind

Inspection pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 600 Charge press. hPa: 1000

TD travel mm: 0,4...1,2mm: (0,1...1,5)

1/min: 750 2nd speed

1st speed 1/min: 500 Charge press. hPa: 1000 Supply-pump Dressure bar: 2,22,8 2nd speed 1/min: 750 Charge press. hPa: 1000 Supply-pump Dressure bar: 3,23,8 3rd speed 1/min: 1050 Charge press. hPa: 1000 Supply-pump Dressure bar: 4,55,1 Overflow quantity at overflow valve: 1st speed 1/min: 500 Charge press. hPa: 1000 Supply-pump Supply-pump Dressure bar: 4,55,1 Overflow quantity at overflow valve: 1st speed 1/min: 500 Charge press. hPa: - Overflow quantity cm3/10s: (2698) 2nd speed 1/min: 1250 Charge press. hPa: 1000 Overflow is 55138 Quantity cm3/10s: (2698) Pel. quantity cm3/10s: (40153) Delivery-quant. and breakaway char: 1st speed 1/min: 700* Charge-air pressure—setting point hPa: 550 Del. quantity cm3/10s: (74,082,0) 2nd speed 1/min: 1330 Charge press. hPa: 1000 Pel. quantity cm3/5: 0,03,0 1000H: (74,082,0) 2nd speed 1/min: 1330 Charge press. hPa: 000 Pel. quantity cm3/5: 0,03,0 1000H: - 1000H: (74,082,0) 2nd speed 1/min: 250 Charge press. hPa: - Del. quantity cm3/5: 0,03,0 1000H: - 1000H: (74,082,0) 2nd speed 1/min: 250 Charge press. hPa: - Del. quantity cm3/5: 0,04,0 Taspeed 1/min: 1330 Charge press. hPa: - Del. quantity cm3/5: 0,03,0 1000H: - 1000H: (74,082,0) Taspeed 1/min: 250 Charge press. hPa: - Del. quantity cm3/5: 0,04,0 Taspeed 1/min: 250 Charge press. hPa: - Del. quantity cm3/5: 0,04,0 Taspeed 1/min: 250 Charge press. hPa: - Del. quantity cm3/5: 0,04,0 Taspeed 1/min: 250 Charge press. hPa: - Del. quantity cm3/5: 0,04,0 Taspeed 1/min: 250 Charge press. hPa: - Del. quantity cm3/5: 0,04,0 Taspeed 1/min: 250 Charge press. hPa: - Del. quantity cm3/5: 0,04,0 Taspeed 1/min: 250 Charge press. hPa: - Del. quantity cm3/5: 0,04,0 Taspeed 1/min: 250 Charge press. hPa: - Del. quantity cm3/5: 0,04,0 Taspeed 1/min: 250 Charge press. hPa: - Del. quantity cm3/5: 0,04,0 Taspeed 1/min: 250 Charge press. hPa: - Del. quantity cm3/5: 0,04,0 Taspeed 1/min: 250 Charge press. hPa: - Del. quantity cm3/5: 0,04,0 Taspeed 1	Charge press. hPa: 1000 TD travel mm: 1,31,7 mm: (0,82,2) 3rd speed 1/min: 1050 Charge press. hPa: 1000 TD travel mm: 2,02,8 mm: (1,73,1)	Del.quantity cm3/: 85,088,0 1000H.: (83,090,0) 7th speed 1/min: 750 Charge press. hPa: 1000 Del.quantity cm3/: 89,590,5 1000H.: (87,093,0) 8th speed 1/min: 700 Charge press. hPa: 550
Charge press. hPa: 1000 Supply-pump pressure bar: 3,23,8 3rd speed 1/min: 1050 Charge press. hPa: 1000 Supply-pump pressure bar: 4,55,1 Overflow quantity at overflow valve: 1st speed 1/min: 500 Charge press. hPa: - Oveflow (4183 quantity cm3/10s: (2698) Charge press. hPa: 1000 Overflow (55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge press. hPa: 1000 Overflow (55138) quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge press pressure—setting point hPa: 550 LDA stroke mm: 5,0 Del.quantity cm3/: 7,578,5 1000H.: (74,082,0) 2nd speed 1/min: 1330 Charge press. hPa: 1000 Del.quantity cm3/: 0,03,0 1000H.: - 2nd speed 1/min: 250 Charge press. hPa: 1000 Del.quantity cm3/: 0,03,0 1000H.: - 2nd speed 1/min: 500 Charge press. hPa: 1000 Del.quantity cm3/: 0,03,0 1000H.: - 2nd speed 1/min: 250 Charge press. hPa: 1000 Del.quantity cm3/: 0,03,0 1000H.: - 2nd speed 1/min: 250 Charge press. hPa: 1000 Del.quantity cm3/: - Del.q	Charge press. hPa: 1000 Supply-pump	
Overflow quantity at overflow valve: 1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1250 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 550 LDA stroke ms: 5,0 Del.quantity cm3/: 77,578,5 1000H.: (74,082,0) Del.quantity cm3/: 0,03,0 1000H.: 74,082,0) 2nd speed 1/min: 250 Charge press. hPa: 1000 Del.quantity cm3/: 0,03,0 1000H.: - 3rd speed 1/min: 1300 Charge press. hPa: 1000 Del.quantity cm3/: 5,055,0 Del.quantity cm3/: 5,055,0 Del.quantity cm3/: 69,575,5 1000H.: (66,578,5) 1000H.: (66,578,5) 1000H.: 66,578,5) 1000H.: (75,081,0) Automatic starting fuel delivery 2nd speed 1/min: 250 Charge press. hPa: - Del.quantity cm3/: - ind. 1000H: 70,0 2nd speed 1/min: 450 Charge press. hPa: - Del.quantity cm3/: - ind. 1000H: 88,0 Shutoff electromagnet: Cut-in min. voltage : 20,0 Rated voltage : 24,0 Mounting and assembly dimensions: 6th speed 1/min: 1050	Charge press. hPa: 1000 Supply-pump pressure bar: 3,23,8 3rd speed 1/min: 1050 Charge press. hPa: 1000 Supply-pump	Mech. shutoff: Speed 1/min: 1250 Del.quantity cm3/: 03
Charge press. hPa:		+
Overflow : 55138 quantity cm3/10s: (40153) Delivery—quant. and breakaway char.: Delivery—quant. and breakaway char.: 1st speed 1/min: 375	Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1250 Charge press. hPa: 1000	ELAB volt: - Del.quantity cm3/: 0,03,0 max. 1000H.: -
1st speed 1/min: 700* Charge—air pressure—setting point hPa: 550 LDA stroke mm: 5,0 Del.quantity cm3/: 77,578,5 1000H.: (74,082,0) 2nd speed 1/min: 1330 Charge press. hPa: 1000 Del.quantity cm3/: 0,03,0 1000H.: - 3rd speed 1/min: 1300 Charge press. hPa: 1000 Del.quantity cm3/: 15,055,0 Del.quantity cm3/: 5,055,0 Del.quantity cm3/: 69,575,5 1000H.: (66,578,5) 5th speed 1/min: 1250 Charge press. hPa: 1000 Del.quantity cm3/: 69,575,5 1000H.: (66,578,5) 5th speed 1/min: 1250 Charge press. hPa: 1000 Del.quantity cm3/: 76,579,5 1000H.: (75,081,0) 6th speed 1/min: 1050 Del.quantity cm3/: 76,579,5 1000H.: (75,081,0) 6th speed 1/min: 1050	quantity cm3/10s: (40153)	Del.quantity cm3/: 8,014,0 1000H.: (6,016,0)
Del.quantity cm3/: 77,578,5	Charge-air pressure-setting point hPa: 550	+ Del.quantity cm3/: 0,04,0 + 1000H.: -
3rd speed 1/min: 1300 Charge press. hPa: 1000 Del.quantity cm3/: 15,055,0 4th speed 1/min: 1260 Charge press. hPa: 1000 Charge press. hPa: 1000 Charge press. hPa: 1000 Del.quantity cm3/: 69,575,5 1000H.: (66,578,5) Sth speed 1/min: 1250 Charge press. hPa: 1000 Charge press. hPa: 1000 Del.quantity cm3/: 76,579,5 1000H.: (75,081,0) Oth speed 1/min: 1050 And speed 1/min: 450 Charge press. hPa: - Del.quantity cm3/: - max. 1000H : 88,0 Cut-in min. voltage : 20,0 Rated voltage : 24,0 Mounting and assembly dimensions: Oth speed 1/min: 1050	Del.quantity cm3/: 77,578,5 1000H.: (74,082,0) 2nd speed 1/min: 1330 Charge press. hPa: 1000 Del.quantity cm3/: 0,03,0	1st speed 1/min: 250 Charge press. hPa: - Del.quantity cm3/: -
Charge press. hPa: 1000 Del.quantity cm3/: 69,575,5 1000H.: (66,578,5) Sth speed 1/min: 1250 Charge press. hPa: 1000 Del.quantity cm3/: 76,579,5 1000H.: (75,081,0) 6th speed 1/min: 1050 Shutoff electromagnet: Cut-in min. voltage : 20,0 Rated voltage : 24,0 Mounting and assembly dimensions:	3rd speed	+ Charge press. hPa: - + Del.quantity cm3/: -
Del.quantity cm3/: 76,579,5 + 1000H.: (75,081,0) + Mounting and assembly dimensions: 6th speed 1/min: 1050 +	Charge press. hPa: 1000 Del.quantity cm3/: 69,575,5 1000H.: (66,578,5) 5th speed 1/min: 1250	Cut-in min. voltage : 20,0
inarna nrace neat didit — Decimpation	Del.quantity cm3/: 76,579,5 1000H.: (75,081,0)	Mounting and assembly dimensions: Designation

K mm : KF mm : 5,0..5,4
MS mm : 1,0..1,4
SVS max. mm : 2,0
XK mm : 21,8...23,8
XL mm : 13,8...17,2

Remarks:

:

* Correction at adjusting nut (46)

Operate control lever after each manifold pressure compensator pressure change.

Note inst. in remarks column

: CUM 5.9 U36 Test sheet : 03.05.90 Edition replaces : 23.10.89 : ISO 4113 Calibrating oil

Injection pump : VE 6/12F1050 R373-2 : 0 460 426 145 Type number

Customer-specific information

: CDC Customer

: 6 BTA - 5.9 IND. Engine

k: 124 1/mi: 2100 Power Speed

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening (

bar: 250...253 pressure

Perforated-plate

diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter x Wall thickness mm: 840 x Length

Start of delivery

Prestroke mm : 0.3

(from BDC): +0.02(0.04)

Start of delivery block Piston stroke mm: 1.85

mm: +-0.02(0.06)

: D Outlet

Injection pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750 Charge press. hPa: 1000 mm: 1.5...1.9 Setting value

Supply-pump pressure:

1/min: 750 Speed Charge press. hPa: 1000 Setting value bar: 2.9...3.5

Full-load del. with charge press.:

Speed 1/min: 750 Charge press. hPa: 1000 Del.quantity cm3/ 1000H.: 94.5...95.5

Dispersion cm3/: 4.01000H: (4.5)

Full-load del. w/out charge press.:

1/min : 500 Speed

Del.quantity cm3/ 1000H.: 50.5...51.5

cm3/: 9.0 Dispersion 1000H.: -

Low-idle speed regulation:

Speed 1/min: 375 Charge press. hPa: -

Del.quantity cm3/ 1000H.: 8.0...12.0 Dispersion cm3/: 5.5 1000H.: (7.0)

Full-load speed regulation:

1/min: 1100 Speed Charge press. hPa: 1000

Del.quantity cm3/

1000H: 73.0...79.0

Start:

1/min: 100 Speed Charge press. hPa: -Del.quantity : - mind cm3/1000H.: 60.0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 600 Charge press. hPa: 1000

TD travel mm: 0.51.4		oth speed 1/min: 1000
mm: (0.21.6)	† !	Charge press. hPa: 1000
2nd speed 1/min: 750	† (Del.quantity cm3/: 83.586.5 1000H.: (82.088.0)
Charge press. hPa: 1000		
TD travel mm: 1.51.9	+ 9	6th speed 1/min: 900
mm: (1.02.4)	+ 9	Charge press. hPa: 1000
3rd speed 1/min: 1050	+ [Del.quantity cm3/: 87.590.5
Charge press. hPa: 1000	+ .	1000H.: (86.092.0)
TD travel mm: 2.53.4	+ 7	7th speed 1/min: 750
mm: (2.23.6)	+ (Charge press. hPa: 1000
	+ (Del.quantity cm3/: 94.595.5
Supply-pump pressure characteristic:	+	1000H : (92.098.0)
	+ 8	8th speed 1/min: 500
1st speed 1/min: 500	+ (Charge press. hPa: 1000
Charge press. hPa: 1000	+ (Del.quantity cm3/: 98.0106.0
Supply-pump	+	1000H: -
pressure bar: 1.82.4	+ 9	9th speed 1/min: 500
bar: (1.62.6)		Charge press. hPa: -
2nd speed 1/min: 750	1 1	Del.quantity cm3/: 50.551.5
Charge press. hPa: 1000	1	1000H: (46.555.5)
Supply-pump	1	
pressure bar: 2.93.5	1 :	Zero delivery (stop):
bar: (2.73.7)	<u> </u>	Let o de civer, to cops.
3rd speed 1/min: 1050	1	Mech. shutoff:
Charge press. hPa: 1000	Τ.	Sideon Sideon
Supply-pump	1 ,	Speed 1/min: 1050
		Del.quantity cm3/: 03
pressure bar: 4.34.9 bar: (4.15.1)	Ι ,	1000H.: -
Dal. (4.1).()	T	roodn
	1.	
Quantilar quantity at avanflar valva:	† ,	Flactr shutoff.
Overflow quantity at overflow valve:	†	Electr. shutoff:
	+	
1st speed 1/min: 500	+ :	Speed 1/min: 375
1st speed 1/min: 500 Charge press. hPa: -	+ 3	Speed 1/min: 375 ELAB volt: -
1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183	+ 3	Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0
1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698)	+ 3	Speed 1/min: 375 ELAB volt: -
1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050	+	Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: -
1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000	+	Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0
1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138	+ + + + + + + + + + + + + + + + + + + +	Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery:
1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000		Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375
1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153)		Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0
1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138		Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0 1000H.: (5.015.0)
1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.:		Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0 1000H.: (5.015.0) 2nd speed 1/min: 500
1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700*		Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0 1000H.: (5.015.0) 2nd speed 1/min: 500 Del.quantity cm3/: 0.04.0
1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting		Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0 1000H.: (5.015.0) 2nd speed 1/min: 500
1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300		Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0
1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300 LDA stroke mm: 7,3		Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0 1000H.: (5.015.0) 2nd speed 1/min: 500 Del.quantity cm3/: 0.04.0
1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300 LDA stroke mm: 7,3 Del.quantity cm3/: 79.580.5		Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0
1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300 LDA stroke mm: 7,3 Del.quantity cm3/: 79.580.5 1000H: (75.584.5)		Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0
1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300 LDA stroke mm: 7,3 Del.quantity cm3/: 79.580.5 1000H: (75.584.5) 2nd speed 1/min: 1200		Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0
1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300 LDA stroke mm: 7,3 Del.quantity cm3/: 79.580.5 1000H.: (75.584.5) 2nd speed 1/min: 1200 Charge press. hPa: 1000		Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0
1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300 LDA stroke mm: 7,3 Del.quantity cm3/: 79.580.5 1000H.: (75.584.5) 2nd speed 1/min: 1200 Charge press. hPa: 1000 Del.quantity cm3/: 0.03.0		Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0
1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300 LDA stroke mm: 7,3 Del.quantity cm3/: 79.580.5 1000H.: (75.584.5) 2nd speed 1/min: 1200 Charge press. hPa: 1000 Del.quantity cm3/: 0.03.0 1000H.: (0.03.0)		Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0
1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300 LDA stroke mm: 7,3 Del.quantity cm3/: 79.580.5 1000H.: (75.584.5) 2nd speed 1/min: 1200 Charge press. hPa: 1000 Del.quantity cm3/: 0.03.0 1000H.: (0.03.0) 3rd speed 1/min: 1140		Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0
1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300 LDA stroke mm: 7,3 Del.quantity cm3/: 79.580.5 1000H.: (75.584.5) 2nd speed 1/min: 1200 Charge press. hPa: 1000 Del.quantity cm3/: 0.03.0 1000H.: (0.03.0) 3rd speed 1/min: 1140 Charge press. hPa: 1000		Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0
1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300 LDA stroke mm: 7,3 Del.quantity cm3/: 79.580.5		Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0
1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300 LDA stroke mm: 7,3 Del.quantity cm3/: 79.580.5		Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0
1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300 LDA stroke mm: 7,3 Del.quantity cm3/: 79.580.5		Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0
1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300 LDA stroke mm: 7,3 Del.quantity cm3/: 79.580.5 1000H.: (75.584.5) 2nd speed 1/min: 1200 Charge press. hPa: 1000 Del.quantity cm3/: 0.03.0 1000H.: (0.03.0) 3rd speed 1/min: 1140 Charge press. hPa: 1000 Del.quantity cm3/: 15.055.0 1000H.: (15.055.0) 4th speed 1/min: 1100 Charge press. hPa: 1000 Charge press. hPa: 1000		Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0
1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300 LDA stroke mm: 7,3 Del.quantity cm3/: 79.580.5 1000H.: (75.584.5) 2nd speed 1/min: 1200 Charge press. hPa: 1000 Del.quantity cm3/: 0.03.0 1000H.: (0.03.0) 3rd speed 1/min: 1140 Charge press. hPa: 1000 Del.quantity cm3/: 15.055.0 1000H.: (15.055.0)		Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0

Cut-in

min. voltage : 20.0 Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

K mm : KF mm : 5.0...5.4
MS mm : 1.2...1.6
SVS max. mm : 1.2

Remarks:

Operate control lever after each 7000 manifold pressure compensator pressure change.

* Correction at adjusting nut (46)

Note inst. in remarks column

: CUM 5.9 W43 Test sheet : 03.05.90 Edition

replaces

Calibrating oil : ISO 4113

Injection pump : VE 6/12F1050 R373-2 Type number : 0 460 426 145

Customer Part-No.: 3 916 989

Customer-specific information

Customer

: 6 BTA - 5.9 IND. Engine

k: 124 1/mi: 2000 Power Speed

TEST BENCH REQUIREMENTS

Calibrating-oil

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Openina

bar: 250...253 pressure

Perforated plate

mm : 0.5diameter

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

Prestroke mm: 0.3

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke mm: 1.85

mm: +-0.02(0.06)

: D Outlet

Injection-pump setting values Test specifications in parentheses Timing-device travel:

1/min: 750 Speed Charge press. hPa: 1000 Setting value mm: 1.5...1.9

Supply-pump pressure:

1/min: 750 Speed Charge press. hPa: 1000 Setting value bar: 3,5...4,1

Full-load del. with charge press.:

1/min: 750 Speed Charge press. hPa: 1000

Del.quantity cm3/ 1000H.: 96,5...97.5 Dispersion cm3/: 4.0 1000H: (4.5)

Full-load del. w/out charge press.:

Speed $1/\min : 500$

Del.quantity cm3/

1000H.: 64,5...65.5

cm3/: 9.0Dispersion

1000H.: -

Low-idle speed regulation:

1/min: 375 Speed Charge press. hPa: -

Del.quantity cm3/ 1000H.: 9.0...13.0

cm3/: 5.5 Dispersion 1000H.: (7.0)

Full-load speed regulation:

1/min: 1040 Speed Charge press. hPa: 1000

Del.quantity cm3/ 1000H: 76,5...82,5

Start:

1/min: 100 Speed Charge press. hPa: -Del.quantity cm3/1000H.: 70.0 mind

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 500 1st speed Charge press. hPa: 1000

TD travel mm: 0.71.5	→ Del.quantity cm3/: 86,589.5
mm: (0.41.8) 2nd speed 1/min: 750	+ Del.quantity cm3/: 86,589.5 + 1000H.: (85.091.0) + 6th speed 1/min: 850
Charge press. hPa: 1000	+ Charge press. hPa: 1000
TD travel mm: 1.62,0	+ Del.quantity cm3/: 91,594.5
mm: (1.12.5) 3rd speed	1000H.: (90.096.0) 7th speed 1/min: 750
Charge press hPa: 1000	- Charge press. hPa: 1000
TD travel mm: 2.12,9 mm: (1,83.2)	Charge press. hPa: 1000 Del.quantity cm3/: 96.597.5 1000H.: (94.0100,0)
11411. (1,03.2)	+ 8th speed 1/min: 500
Supply-pump pressure characteristic:	+ Charge press. hPa: 1000
1st speed 1/min: 500	Del.quantity cm3/: 98,0106,0 1000H: (96,0108,0)
Charge press. hPa: 1000	1000H: (96,0108,0) + 9th speed 1/min: 500
Supply-pump nressure bar: 2.53.1	+ Charge press. hPa: - Del.quantity cm3/: 64,565,5
pressure bar: 2,53,1 2nd speed 1/min: 750	1000H: (60,569,5)
Charge press. hPa: 1000 Supply-pump	† Zero delivery (stop):
pressure bar: 3,54,1	+
3rd speed 1/min: 1000 Charge press. hPa: 1000	Mech. shutoff:
Supply-pump	Speed 1/min: 1000
pressure bar: 4.55,1	+ Del.quantity cm3/: 03 + 1000H.: -
Overflow quantity at overflow valve:	+
1st speed 1/min. 500	† Electr. shutoff:
1st speed 1/min: 500 Charge press. hPa: -	T Speed 1/min: 375
Oveflow: 4183	+ ELAB volt: -
quantity cm3/10s: (2698) 2nd speed 1/min: 1000	Del.quantity cm3/: 0.03.0 max. 1000H.: -
Charge press. hPa: 1000	Tall and all formers
Overflow : 55138 quantity cm3/10s: (40153)	+ Idle delivery:
	1st speed 1/min: 375
Delivery-quant. and breakaway char.:	Del.quantity cm3/: 9.013.0 1000H.: (6.016.0)
1st speed 1/min: 700*	+ 2nd speed 1/min: 500
Charge-air pressure-setting point hPa: 450	Del.quantity cm3/: 0.04.0 1000H.: -
LDA stroke mm: 7,3	+
Del.quantity cm3/: 86.587.5 1000H.: (82,591.5)	Automatic starting fuel delivery:
2nd speed 1/min: 1120	+ 1st speed 1/min: 250
Charge press. hPa: 1000	+ Charge press. hPa: - Del.quantity cm3/: -
Del.quantity cm3/: 0.015,0 1000H.: -	+ ind. 1000H: 45.0
3rd speed 1/min: 1080	1/mins /50
Charge press. hPa: 1000 Del.quantity cm3/: 15.055.0	+ 2nd speed 1/min: 450 + Charge press. hPa: -
1000H.: -	+ Del.quantity cm3/: -
4th speed 1/min: 1040 Charge press. hPa: 1000	max. 1000H : 55.0
Charge press. hPa: 1000 Del.quantity cm3/: 76,582,5	+ Shutoff electromagnet:
1000H.: (73,585,5) 5th speed 1/min: 1000	† Cut-in
Charge press. hPa: 1000	+ min. voltage : 10.0
	+ Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm	:	_
KF	mm	:	5.05.4
MS	mm	:	1.21.6
SVS max.			1.2

Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut (46)

Note inst. in remarks column

: CUM 5.9 W44 Test sheet : 03.05.90 Edition

replaces

Calibrating oil : ISO 4113

: VE 6/12F1050 R373-2 Injection pump

: 0 460 426 145 Type number

Customer Part-No.: 3 916 990

Customer-specific information

Customer : CDC

: 6 BTA - 5.9 IND. Engine

k: 124 1/mi: 2000 Power Speed

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

bar: 250...253 pressure

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm : 840 x Length

Start of delivery

Prestroke mm: 0.3

(from BDC): +0.02(0.04)

Start of delivery block Piston stroke mm: 1.85

mm: +0.02(0.06)

Outlet.

Injection pump setting values Test specifications in parentheses Timing-device travel:

1/min: 750 Speed Charge press. hPa: 1000 Setting value mm: 1.5...1.9

Supply-pump pressure:

1/min: 750 Speed Charge press. hPa: 1000 Setting value bar: 3,5...4,1

Full-load del. with charge press.:

1/min: 750 Speed Charge press. hPa: 1000

Del.quantity cm3/ 1000H.: 96,5...97.5

cm3/: 4.0Dispersion 1000H : (4.5)

Full-load del. w/out charge press.:

 $1/\min : 500$ Speed

Del.quantity cm3/ 1000H.: 64,5...65.5

cm3/: 9.0 Dispersion 1000H .: -

Low-idle speed regulation:

Speed 1/min: 375 Charge press. hPa: -Del.quantity cm3/

1000H.: 9.0...13.0 cm3/: 5.5

Dispersion 1000H.: (7.0)

Full-load speed regulation:

1/min: 1040 Speed Charge press. hPa: 1000

Del.quantity cm3/

1000H: 76,5...82,5

Start:

1/min: 100 Speed Charge press. hPa: -Del.quantity cm3/1000H.: 70.0 mind

Inspection pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 500 1st speed Charge press. hPa: 1000

TD travel mm: 0.71.5	Del.quantity cm3/: 86,589.5 1000H.: (85.091.0) 6th speed 1/min: 850 Charge press. hPa: 1000 Del.quantity cm3/: 91,594.5 1000H.: (90.096.0) 7th speed 1/min: 750 Charge press. hPa: 1000 Del.quantity cm3/: 96.597.5 1000H.: (94.0100,0)
Supply-pump pressure characteristic: 1st speed 1/min: 500 Charge press. hPa: 1000 Supply-pump pressure	8th speed 1/min: 500 Charge press. hPa: 1000 Del.quantity cm3/: 98,0106,0 1000H: (96,0108,0) 9th speed 1/min: 500 Charge press. hPa: - Del.quantity cm3/: 64,565,5 1000H: (60,569,5)
Charge press. hPa: 1000 Supply-pump pressure bar: 3,54,1 3rd speed 1/min: 1000 Charge press. hPa: 1000 Supply-pump pressure bar: 4.55,1	Zero delivery (stop): Mech. shutoff: Speed 1/min: 1000 Del.quantity cm3/: 03 1000H.: -
Overflow quantity at overflow valve: 1st speed 1/min: 500 Charge press. hPa: - Oveflow	Electr. shutoff: Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: -
Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 450	Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 9.013.0 1000H.: (6.016.0) 2nd speed 1/min: 500 Del.quantity cm3/: 0.04.0 1000H.: -
LDA stroke mm: 7,3 Del.quantity cm3/: 86.587.5 1000H.: (82,591.5) 2nd speed 1/min: 1120 Charge press. hPa: 1000 Del.quantity cm3/: 0.015,0 1000H.: - 3rd speed 1/min: 1080 Charge press. hPa: 1000 Del.quantity cm3/: 15.055.0 1000H.: - 4th speed 1/min: 1040 Charge press. hPa: 1000 Del.quantity cm3/: 76,582,5	Automatic starting fuel delivery: 1st speed 1/min: 250 Charge press. hPa: - Del.quantity cm3/: - ind. 1000H: 45.0 2nd speed 1/min: 450 Charge press. hPa: - Del.quantity cm3/: - max. 1000H: 55.0 Shutoff electromagnet:
1000H.: (73,585,5) 5th speed	Cut-in min. voltage : 20.0 Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

K mm : KF mm : 5.0...5.4
MS mm : 1.2...1.6
SVS max. mm : 1.2

Remarks:

iki ku

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut (46)

Note inst. in remarks column

: CUM 5.9 W42 Test sheet Edition : 03.05.90

replaces

Calibrating oil : ISO 4113

: VE 6/12F1050 R373-2 Injection pump

: 0 460 426 145 Type number Customer Part-No.: 3 916 999

Customer-specific information

Customer : CDC

: 6 BTA - 5.9 IND. Engine

k: 124 Power 1/mi: 2100 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil

return temp.

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening

bar: 250...253 pressure

Perforated-plate

mm: 0.5 diameter

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

mm: 0.3 Prestroke

(from BDC): +0.02(0.04)

Start of delivery block mm: 1.85 Piston stroke

mm: +0.02(0.06)

Outlet

Injection-pump setting values Test specifications in parentheses Timing-device travel:

1/min: 750 Speed Charge press. hPa: 1000 Setting value mm: 1.5...1.9

Supply-pump pressure:

1/min: 750 Speed Charge press. hPa: 1000 Setting value bar: 2.9...3.5

Full-load del. with charge press.:

1/min: 750 Speed Charge press. hPa: 1000

Del.quantity cm3/ 1000H.: 94.5...95.5

cm3/:4.0Dispersion 1000H: (4.5)

Full-load del. w/out charge press.:

 $1/\min : 500$ Speed

Del.quantity cm3/

1000H.: 50.5...51.5

cm3/: 9.0 Dispersion 1000H.: -

Low-idle speed regulation:

1/min: 375 Speed Charge press. hPa: -

Del.quantity cm3/ 1000H.: 8.0...12.0

cm3/: 5.5Dispersion 1000H.: (7.0)

Full-load speed regulation:

Speed 1/min: 1100 Charge press. hPa: 1000

Del.quantity cm3/ 1000H: 73.0...79.0

Start:

1/min: 100 Speed Charge press. hPa: -Del.quantity cm3/1000H.: 60.0 mind i

Inspection pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 600 1st speed Charge press. hPa: 1000

TD travel mm: 0.51.4	+ 5th speed 1/min: 1050
mm: (0.21.6)	+ Charge press. hPa: 1000
2nd speed 1/min: 750	+ Del.quantity cm3/: 83.586.5
Charge press. hPa: 1000	1000H.: (82.088.0)
TD travel mm: 1.51.9	+ 6th speed 1/min: 900
mm: (1.02.4)	+ Charge press. hPa: 1000
3rd speed 1/min: 1050	Del.quantity cm3/: 87.590.5
Charge press. hPa: 1000	1000H.: (86.092.0)
TD travel mm: 2.53.4	7th speed 1/min: 750
mm: (2.23.6)	+ Charge press. hPa: 1000
Cumples promo programa abanactamintias	Del.quantity cm3/: 94.595.5 1000H.: (92.098.0)
Supply-pump pressure characteristic:	8th speed 1/min: 500
1st speed 1/min: 500	Charge press. hPa: 1000
Charge press. hPa: 1000	Del. quantity cm3/: 98.0106.0
Supply-pump	1000H: -
pressure bar: 1.82.4	+ 9th speed 1/min: 500
bar: (1.62.6)	+ Charge press. hPa: -
2nd speed 1/min: 750	+ Del.quantity cm3/: 50.551.5
Charge press. hPa: 1000	1000H: (46.555.5)
Supply-pump	+
pressure bar: 2.93.5	+ Zero delivery (stop):
bar: (2.73.7)	+
3rd speed 1/min: 1050	+ Mech. shutoff:
Charge press. hPa: 1000	+
Supply-pump	+ Speed 1/min: 1050
pressure bar: 4.34.9	+ Del.quantity cm3/: 03
bar: (4.15.1)	† 1000H.: -
	†
Overflow quantity at overflow valve:	
over teem duality as ever teem to ever	+ Electr. shutoff:
	+
1st speed 1/min: 500	+ Speed 1/min: 375
1st speed 1/min: 500 Charge press. hPa: -	Speed 1/min: 375 + ELAB volt: -
1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183	Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0
1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698)	Speed 1/min: 375 + ELAB volt: -
1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050	Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: -
1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000	Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0
1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138	Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery:
1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000	Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375
1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153)	Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0
1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138	Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0 1000H.: (5.015.0)
1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery—quant. and breakaway char.:	Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0 1000H.: (5.015.0) 2nd speed 1/min: 500
1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery—quant. and breakaway char.: 1st speed 1/min: 700*	Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0 1000H.: (5.015.0)
1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery—quant. and breakaway char.: 1st speed 1/min: 700* Charge—air pressure—setting point hPa: 300	Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0 1000H.: (5.015.0) 2nd speed 1/min: 500 Del.quantity cm3/: 0.04.0 1000H.: (0.04.0)
1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery—quant. and breakaway char.: 1st speed 1/min: 700* Charge—air pressure—setting point hPa: 300 LDA stroke mm: 7.3	Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0 1000H.: (5.015.0) 2nd speed 1/min: 500 Del.quantity cm3/: 0.04.0
1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300 LDA stroke mm: 7,3 Del.quantity cm3/: 79.580.5	Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0 1000H.: (5.015.0) 2nd speed 1/min: 500 Del.quantity cm3/: 0.04.0 1000H.: (0.04.0) Automatic starting fuel delivery:
1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300 LDA stroke mm: 7,3 Del.quantity cm3/: 79.580.5 1000H.: (75.584.5)	Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0 1000H.: (5.015.0) 2nd speed 1/min: 500 Del.quantity cm3/: 0.04.0 1000H.: (0.04.0) Automatic starting fuel delivery: 1st speed 1/min: 250
1st speed 1/min: 500 Charge press. hPa: — Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery—quant. and breakaway char.: 1st speed 1/min: 700* Charge—air pressure—setting point hPa: 300 LDA stroke mm: 7,3 Del.quantity cm3/: 79.580.5 1000H.: (75.584.5) 2nd speed 1/min: 1200	Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0 1000H.: (5.015.0) 2nd speed 1/min: 500 Del.quantity cm3/: 0.04.0 1000H.: (0.04.0) Automatic starting fuel delivery: 1st speed 1/min: 250 Charge press. hPa: -
1st speed 1/min: 500 Charge press. hPa: — Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery—quant. and breakaway char.: 1st speed 1/min: 700* Charge—air pressure—setting point hPa: 300 LDA stroke mm: 7,3 Del.quantity cm3/: 79.580.5 1000H.: (75.584.5) 2nd speed 1/min: 1200 Charge press. hPa: 1000	Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0 1000H.: (5.015.0) 2nd speed 1/min: 500 Del.quantity cm3/: 0.04.0 1000H.: (0.04.0) Automatic starting fuel delivery: 1st speed 1/min: 250 Charge press. hPa: - Del.quantity cm3/: -
1st speed 1/min: 500 Charge press. hPa: — Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery—quant. and breakaway char.: 1st speed 1/min: 700* Charge—air pressure—setting point hPa: 300 LDA stroke mm: 7,3 Del.quantity cm3/: 79.580.5 1000H.: (75.584.5) 2nd speed 1/min: 1200 Charge press. hPa: 1000 Del.quantity cm3/: 0.03.0	Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0 1000H.: (5.015.0) 2nd speed 1/min: 500 Del.quantity cm3/: 0.04.0 1000H.: (0.04.0) Automatic starting fuel delivery: 1st speed 1/min: 250 Charge press. hPa: -
1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery—quant. and breakaway char.: 1st speed 1/min: 700* Charge—air pressure—setting point hPa: 300 LDA stroke mm: 7,3 Del.quantity cm3/: 79.580.5 1000H.: (75.584.5) 2nd speed 1/min: 1200 Charge press. hPa: 1000 Del.quantity cm3/: 0.03.0 1000H.: (0.03.0)	Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0 1000H.: (5.015.0) 2nd speed 1/min: 500 Del.quantity cm3/: 0.04.0 1000H.: (0.04.0) Automatic starting fuel delivery: 1st speed 1/min: 250 Charge press. hPa: - Del.quantity cm3/: - ind. 1000H: 45.0
1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery—quant. and breakaway char.: 1st speed 1/min: 700* Charge—air pressure—setting point hPa: 300 LDA stroke mm: 7,3 Del.quantity cm3/: 79.580.5 1000H.: (75.584.5) 2nd speed 1/min: 1200 Charge press. hPa: 1000 Del.quantity cm3/: 0.03.0 1000H.: (0.03.0) 3rd speed 1/min: 1140	Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0 1000H.: (5.015.0) 2nd speed 1/min: 500 Del.quantity cm3/: 0.04.0 1000H.: (0.04.0) Automatic starting fuel delivery: 1st speed 1/min: 250 Charge press. hPa: - Del.quantity cm3/: - ind. 1000H: 45.0 2nd speed 1/min: 450
1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery—quant. and breakaway char.: 1st speed 1/min: 700* Charge—air pressure—setting point hPa: 300 LDA stroke mm: 7,3 Del.quantity cm3/: 79.580.5 1000H.: (75.584.5) 2nd speed 1/min: 1200 Charge press. hPa: 1000 Del.quantity cm3/: 0.03.0 1000H.: (0.03.0) 3rd speed 1/min: 1140 Charge press. hPa: 1000	Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0 1000H.: (5.015.0) 2nd speed 1/min: 500 Del.quantity cm3/: 0.04.0 1000H.: (0.04.0) Automatic starting fuel delivery: 1st speed 1/min: 250 Charge press. hPa: - Del.quantity cm3/: - ind. 1000H: 45.0 2nd speed 1/min: 450 Charge press. hPa: -
1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery—quant. and breakaway char.: 1st speed 1/min: 700* Charge—air pressure—setting point hPa: 300 LDA stroke mm: 7,3 Del.quantity cm3/: 79.580.5 1000H.: (75.584.5) 2nd speed 1/min: 1200 Charge press. hPa: 1000 Del.quantity cm3/: 0.03.0 1000H.: (0.03.0) 3rd speed 1/min: 1140 Charge press. hPa: 1000 Del.quantity cm3/: 15.055.0	Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0 1000H.: (5.015.0) 2nd speed 1/min: 500 Del.quantity cm3/: 0.04.0 1000H.: (0.04.0) Automatic starting fuel delivery: 1st speed 1/min: 250 Charge press. hPa: - Del.quantity cm3/: - ind. 1000H: 45.0 2nd speed 1/min: 450 Charge press. hPa: - Del.quantity cm3/: - Del.quantity cm3/: -
1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery—quant. and breakaway char.: 1st speed 1/min: 700* Charge—air pressure—setting point hPa: 300 LDA stroke mm: 7,3 Del.quantity cm3/: 79.580.5	Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0 1000H.: (5.015.0) 2nd speed 1/min: 500 Del.quantity cm3/: 0.04.0 1000H.: (0.04.0) Automatic starting fuel delivery: 1st speed 1/min: 250 Charge press. hPa: - Del.quantity cm3/: - ind. 1000H: 45.0 2nd speed 1/min: 450 Charge press. hPa: -
1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300 LDA stroke mm: 7,3 Del.quantity cm3/: 79.580.5	Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0 1000H.: (5.015.0) 2nd speed 1/min: 500 Del.quantity cm3/: 0.04.0 1000H.: (0.04.0) Automatic starting fuel delivery: 1st speed 1/min: 250 Charge press. hPa: - Del.quantity cm3/: - ind. 1000H: 45.0 2nd speed 1/min: 450 Charge press. hPa: - Del.quantity cm3/: - max. 1000H: 55.0
1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery—quant. and breakaway char.: 1st speed 1/min: 700* Charge—air pressure—setting point hPa: 300 LDA stroke mm: 7,3 Del.quantity cm3/: 79.580.5 1000H.: (75.584.5) 2nd speed 1/min: 1200 Charge press. hPa: 1000 Del.quantity cm3/: 0.03.0 1000H.: (0.03.0) 3rd speed 1/min: 1140 Charge press. hPa: 1000 Del.quantity cm3/: 15.055.0 1000H.: (15.055.0) 4th speed 1/min: 1100 Charge press. hPa: 1000 Charge press. hPa: 1000	Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0 1000H.: (5.015.0) 2nd speed 1/min: 500 Del.quantity cm3/: 0.04.0 1000H.: (0.04.0) Automatic starting fuel delivery: 1st speed 1/min: 250 Charge press. hPa: - Del.quantity cm3/: - ind. 1000H: 45.0 2nd speed 1/min: 450 Charge press. hPa: - Del.quantity cm3/: - Del.quantity cm3/: -
1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300 LDA stroke mm: 7,3 Del.quantity cm3/: 79.580.5	Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0 1000H.: (5.015.0) 2nd speed 1/min: 500 Del.quantity cm3/: 0.04.0 1000H.: (0.04.0) Automatic starting fuel delivery: 1st speed 1/min: 250 Charge press. hPa: - Del.quantity cm3/: - ind. 1000H: 45.0 2nd speed 1/min: 450 Charge press. hPa: - Del.quantity cm3/: - max. 1000H: 55.0

Cut-in

min. voltage : 10.0 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm : KF mm : 5.0...5.4
MS mm : 1.2...1.6
SVS max. mm : 1.2

Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut (46)

Note inst. in remarks column

: CUM 5,9 W35 Test sheet : 19.04.90 Edition

replaces

: ISO 4113 Calibrating oil

Injection pump : VE 6/12F1100 R376

Type number : 0 460 426 147

Customer-specific information

Customer : CDC

Engine : 6 BT

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

bar: 250...253 pressure

Perforated plate

mm:0.5diameter

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm : 840 x Length

Start of delivery

mm:0,3Prestroke

(from BDC): +0.02(0.04)

Start of delivery block Piston stroke mm: 1,5

mm: +0,02(0,06)

Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 750 Speed Setting value mm: 3,1..3,5 Supply-pump pressure:

1/min: 750

Setting value bar: 4,1...4,7

Full-load del. w/out charge press.:

 $1/\min : 750$

Del.quantity cm3/

1000H.: 83,5...84,5

cm3/: 4.0Dispersion

1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 360

Del.quantity cm3/ 1000H.: 4,0...10,0

cm3/: 5/5 Dispersion 1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1150

Del.quantity cm3/

1000H: 50,0...56,0

Start:

1/min: 100 Speed

Del.quantity

mind cm3/1000H.: 80,0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500

TD travel mm: 1,0...1,8 mm: (0,7...2,1)

1/min: 750 2nd speed

mm: 3,1...3,5 mm: (2,6...4,0) 1/min: 1100 TD travel

3rd speed TD travel

mm: 5,6...6,4 mm: (5,3...6,7)

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

bar: 3,0...3,6 pressure

1/min: 750 2nd speed

Supply-pump bar: 4,1...4,7 1/min: 1100 pressure

3rd speed

Supply-pump bar: 5,7...6,3 pressure Overflow quantity at overflow valve: 1/min: 500 1st speed : 41...83 Oveflow cm3/10s: (26...98) quantity 1/min: 1100 2nd speed : 55...138 Overflow quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1/min: 1300 1st speed Del.quantity cms/: 0, 1000H.: -1st speed cm3/: 0,0...3,02nd speed 1/min: 1175
Del.quantity cm3/: 15,0...55,0
1000H.: -3rd speed 1/min: 1150 Del.quantity cm3/: 50,0...59,0) 1/min: 1100 4th speed Del.quantity cm3/: 69,5...72,5 1000H.: (68,0...74,0) 5th speed 1/min: 900 Del.quantity cm3/: (1,3...(4,3) 1000H.: (69,5...76,5) 1/min: 750 6th speed Del.quantity cm3/: 83,5...84,5 1000H.: (81,0...87,0) Zero delivery (stop): Mech. shutoff: 1/min: 1100 Speed Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: 1/min: 360 Speed ELAB volt: -Del.quantity cm3/: 0,0...3,0 max. 1000H.: -Idle delivery: 1/min: 360 1st speed Del.quantity cm3/: 4.0...10.0 1000H.: (2.0...12,0) 2nd speed 1/min: 460 Del.quantity cm3/: 0,0...4,0 1000H.: -Automatic starting fuel delivery:

Del.quantity cm3/: -ind. 1000H: 95,0 2nd speed 1/min: 250 Del.quantity cm3/: -max. 1000H: 95,0 Shutoff electromagnet: Cut-in min. voltage Rated voltage Mounting and assembly dimensions: Designation mm KF 5,0...5,4 mm 1,2...1,6 MS mm 1,8 18,8...20,8 SVS max. mm XK mm XL mm : 11,9...15,3 Remarks: : C.D.C. # 391 7559 Heavy-duty fuel-injection pump for DI-engines: only test using timingdevice-travel measuring device with metal jacket

1st speed

1/min: 130

Note inst. in remarks column

: CUM 5,9 W9 Test sheet : 04.05.90 Edition

replaces

: ISO 4113 Calibrating oil

: VE 6/12F1250 R381 Injection pump

: 0 460 426 152 Type number

Customer-specific information

Customer : CDC

Engine : 6 BT

k: 96 Power 1/mi: 2500 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil *C return temp.

with thermometer : 40...48 : 42...50 electronically

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening .

bar: 250...253 pressure

Perforated-plate

diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

 $m_1: 0.3$ Prestroke

(from BDC): +0.02(0.04)

Start of delivery block mm: 1,5 Piston stroke

mm: +0.02(0.06)

Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750

Setting value mm: 3,4...3,8

Supply-pump pressure:

1/min: 750

Setting value bar: 3,5...4,1

Full-load del. w/out charge press.:

Speed 1/min: 1100

Del.quantity cm3/

1000H.: 63,5...64,5

cm3/: 4.0Dispersion

1000H.: (4,5)

Low-idle speed regulation:

1/min: 345

Del.quantity cm3/

1000H.: 9,0...15,0 cm3/: 5,5

Dispersion 1000H.: (7,0)

Full-load speed regulation:

1/min: 1320 Speed

Del.quantity cm3/ 1000H: 44,5...50,5

Start:

Speed 1/min: 100

Del.quantity mind cm3/1000H.: 60.0

Inspection pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500

TD travel

mm: 1,5...2,3 mm: (1,2...2,6) 1/min: 750 2nd speed

mm: 3,4...3,8 mm: (2,9...4,3) TD travel

1/min: 1100

3rd speed TD travel

mm: 5,2...6,0 mm: (4,9...6,3)

Supply-pump pressure characteristic:

1st speed 1/min: 500

Supply-pump

bar: 2,4...3,0 1/min: 750 pressure

Del.quantity cm3/: 0,0...4,0 1000H.: -Supply-pump bar: 3,5...4,1 1/min: 1100 pressure 3rd speed Automatic starting fuel delivery: Supply-pump bar: 4,9...5,5 pressure 1/min: 100 1st speed Del.quantity cm3/: -Overflow quantity at overflow valve: 1000H: 55,0 1/min: 500 1st speed : 41...83 1/min: 450 Oveflow 2nd speed Del.quantity cm3/: -max. 1000H : 75,0 cm3/10s: (26...98) quantity 2nd speed 1/min: 1250 : 55...138 Overflow quantity cm3/10s: (40...153) Shutoff electromagnet: Cut-in Delivery-quant. and breakaway char.: : 10,0 min. voltage : 12,0 1/min: 1450 Rated voltage 1st speed Del.quantity cm3/: 0,0...3,0 1000H.: -Mounting and assembly dimensions: 1/min: 1330 cm3/: 15,0...45,0 2nd speca Del.quantity cm5/: 1000H.: -2nd speed Designation mm mm : 5,0...5,4KF 1/min: 1320 3rd speed Del.quantity cm3/: 44,5...50,5 1000H.: (41,5...53,5) mm : 1,0...1,4MS SVS max. : 1,4 mm 1/min: 1250 4th speed Del.quantity cm3/: 61,0...64,0 1000H.: (59,5...65,5) 5th speed 1/min: 1100 Remarks: : C.D.C. # 391 6936 Heavy-duty fuel-injection pump for Del.quantity cm3/: 63,5...64,5 1000H.: (61,0...67,0) DI-engines: only test using timingdevice-travel measuring device with 1/min: 750 metal jacket 6th speed Del.quantity cm3/: 64,0...68,0 1000H.: (62,0...70,0) 1/min: 500 7th speed Del.quantity cm3/: 65,0...73,0 1000H.: (63,0...75,0) Zero delivery (stop): Mech. shutoff: 1/min: 1250 Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: Speed 1/min: 345 volt: -Del.quantity cm3/: 0,0...3,0 max. 1000H.: -Idle delivery: 1/min: 345 1st speed Del.quantity cm3/: 9,0...15,0 1000H.: (7,0...17,0) 2nd speed 1/min: 500 2nd speed

Note inst. in remarks column

: CUM 5,9 W10 Test sheet Edition : 04.05.90

replaces

Calibrating oil : ISO 4113

Injection pump : VE 6/12F1250 R381 Type number : 0 460 426 152

Customer Part-No.: 3 916 937

Customer-specific information

Customer : CDC

Engine : 6 BT

k: 96 Power 1/mi: 2500 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

assembly : 1 688 901 027

Openina

bar: 250...253 pressure

Perforated-plate

diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

Prestroke mm: 0,3 (from BDC): +0,02(0,04)

Start of delivery block Piston stroke mm: 1,5

mm: +0,02(0,06)

Outlet.

Injection pump setting values Test specifications in parentheses Timing-device travel:

1/min: 750 Setting value mm: 3,4...3,8

Supply-pump pressure:

Speed 1/min: 750

Setting value bar: 3,5...4,1

Full-load del. w/out charge press.:

 $1/\min : 1100$ Speed

Del.quantity cm3/

1000H.: 63,5...64,5

cm3/: 4,0Dispersion 1000H.: (4,5)

Low-idle speed regulation:

1/min: 345 Speed

Del.quantity cm3/ 1000H.: 9,0...15,0 Dispersion cm3/: 5,5 1000H.: (7,0)

Full-load speed regulation:

1/min: 1320 Speed

Del.quantity cm3/

1000H: 44,5...50,5

Start:

1/min: 100 Speed Del.quantity

cm3/1000H.: 60,0 mind

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 500 1st speed

mm: 1,5...2,3 mm: (1,2...2,6) TD travel

1/min: 750 2nd speed

mm: 3,4...3,8 mm: (2,9...4,3) TD travel

1/min: 1100 3rd speed

mm: 5,2...6,0 mm: (4,9...6,3) TD travel

Supply-pump pressure characteristic:

1st speed 1/min: 500

Supply-pump

bar: 2,4...3,0 1/min: 750 pressure

Supply-pump bar: 3,5...4,1 1/min: 1100 pressure 3rd speed Supply-pump bar: 4,9...5,5 pressure Overflow quantity at overflow valve: 1/min: 500 1st speed : 41...83 Oveflow cm3/10s: (26...98) quantity 1/min: 1250 2nd speed Overflow : 55...138 quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1/min: 1450 1st speed cm3/: 0,0...3,0 Del.quantity 1000H .: -1/min: 1330 2nd speed Del.quantity cm3/: 15,0...45,0 1000H.: 3rd speed 1/min: 1320 Del.quantity cm3/: 44,5...50,5 1000H.: (41,5...53,5) 1/min: 1250 4th speed Del.quantity cm3/: 61,0...64,0 1000H.: (59,5...65,5) 1/min: 1100 5th speed Del.quantity cm3/: 63,5...64,5 1000H.: (61,0...67,0) 1/min: 750 6th speed Del.quantity cm3/: 64,0...68,0 1000H.: (62,0...70,0) 7th speed 1/min: 500 Del.quantity cm3/: 65,0...73,0 1000H.: (63,0...75,0) Zero delivery (stop): Mech. shutoff: 1/min: 1250 Speed Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: 1/min: 345 Speed ELAB volt: -Del.quantity cm3/: 0,0...3,0 max. 1000H.: -Idle delivery: 1st speed 1/min: 345
Del.quantity cm3/: 9,0...15,0
1000H.: (7,0...17,0)

1/min: 500

Del.quantity cm3/: 0,0...4,0 1000H.: -

Automatic starting fuel delivery:

2nd speed 1/min: 450 Del.quantity cm3/: - max. 1000H: 75,0

Shutoff electromagnet:

Cut-in

min. voltage : 10,0 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm : KF mm : 5,0...5,4
MS mm : 1,0...1,4
SVS max. mm : 1,4

Remarks:

Heavy-duty fuel-injection pump for DI-engines: only test using timing-device-travel measuring device with metal jacket

Note inst. in remarks column

: CUM 5,9W12 Test sheet : 20.04.90 Edition : 14.11.89 replaces : ISO 4113 Calibrating oil

: VE 6/12F1100 R381-1 Injection pump : 0 460 426 153 Type number

Customer-specific information

: CDC Customer

: 6 BT-5.9 IND. Engine

k: 104 Power 1/mi: 2200 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40...48 : 42...50 electronically

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

bar: 250...253 pressure

Perforated-plate

mm : 0.5 diameter

Test inj. tubing : 1 680 750 017

Outside diameter x Wall thickness : 2 mm: 840 x Length

Start of delivery

mm : 0,3Prestroke

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke

mm: 1,5 mm: +-0,02(0,06)

Outlet : D

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 750 Speed Setting value mm: 3,4...3,8

Supply-pump pressure:

1/min: 750 Setting value bar: 3,5...4,1

Full-load del. w/out charge press.:

1/min : 750 Speed

Del.quantity cm3/

1000H.: 71,5...72,5

Dispersion cm3/: 4.01000H.: (4,5)

Low-idle speed regulation:

1/min: 375 Speed

Del.quantity cm3/ 1000H.: 8,0...14,0

cm3/: 5,5 1000H.: (7,0) Dispersion

Full-load speed regulation:

1/min: 1140 Speed

Del.quantity cm3/ 1000H: 53,0...59,0

Start:

1/min: 100 Speed Del.quantity cm3/1000H.: 60,0 mind

Inspection pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500

mm: 1,5...2,3 mm: (1,2...2,7) TD travel

2nd speed 1/min: 750

mm: 3,4...3,8 mm: (2,9...4,3) TD travel

1/min: 1100

3rd speed TD travel mm: 5,2...6,0mm: (4,9...6,3)

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

bar: 2,4...3,0 1/min: 750 pressure

Supply-pump bar: 3,5...4,1 pressure 1/min: 1100 3rd speed Supply-pump bar: 4,8...5,4 pressure Overflow quantity at overflow valve: 1/min: 500 1st speed Oveflow : 41...83 cm3/10s: (26...98) quantity 2nd speed 1/min: 1100 Overflow : 55...138 quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1st speed 1/min: 1220 Del.quantity cm3/: 0,0...3,0 1000H.: -1/min: 1160 cm3/: 15,0...45,0 2nd specu Del.quantity cms/: 1000H.: -2nd speed 1/min: 1140 3rd speed Del.quantity cm3/: >>,u.../ 1000H.: (50,0...62,0) 1/min: 1100 4th speed Del.quantity cm3/: 66,5...69,5 1000H.: (65,0...71,0) 1/min: 900 5th speed Del.quantity cm3/: 71,5...72,5 1000H.: (69,0...75,0) 6th speed 1/min: 750 Del.quantity cm3/: 70,5...74,5 1000H.: (68,5...76,5) 1/min: 500 7th speed Del.quantity cm3/: 56,0...64,0 1000H.: (54,0...66,0) Zero delivery (stop): Mech. shutoff: Speed 1/min: 1100 Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: 1/min: 375 volt: 24,0 Speed Fl AB Del.quantity cm3/: 0,0...3,0 1000H .: max. Idle delivery: 1st speed 1/min: 375 cm3/: 8,0...14,0 Del.quantity 1000H.: (6,0...16,0)

1/min: 450

Del.quantity cm3/: 0,0...4,0 1000H.: -Automatic starting fuel delivery: 1st speed 1/min: 130 Del.quantity cm3/: -1000H: 60,0 ind. 1/min: 240 2nd speed Del.quantity cm3/: - max. 1000H: 60,0 Shutoff electromagnet: Cut-in min. voltage : 20,0 Rated voltage : 24,0 Mounting and assembly dimensions: Designation K mm KF 5,0...5,4 mm : 0,8...1,2 MS mm SVS max. mm Remarks: : C.D.C. # 391 6920 Heavy-duty fuel-injection pump for DI-engines: only test using timingdevice-travel measuring device with metal jacket Pushing electromagnet.

Note inst. in remarks column

: CUM 5,9W45 Test sheet Edition : 03.05.90

replaces

Calibrating oil : ISO 4113

Injection pump : VE 6/12F1100 R381-1

Type number : 0 460 426 153

Customer Part-No.: 3 916 919

Customer-specific information

Customer : CDC

: 6 BT-5.9 IND. Engine

k: 104 Power 1/mi: 2200 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Openina

bar: 250...253 pressure

Perforated-plate

diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness mm: 840 x Length

Start of delivery

Prestroke mm: 0,3

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke mm: 1,5

mm: +-0.02(0.06)

: D Outlet

Injection-pump setting values Test specifications in parentheses Timing-device travel:

1/min: 750 Speed Setting value mm: 3,4...3,8

Supply-pump pressure:

1/min: 750 Setting value bar: 3,5...4,1

Full-load del. w/out charge press.:

1/min: 750 Speed

Del.quantity cm3/

1000H.: 71,5...72,5

cm3/: 4/0Dispersion 1000H.: (4,5)

Low-idle speed regulation:

1/min: 375 Speed

Del.quantity cm3/

1000H.: 8,0...14,0

cm3/: 5.5Dispersion 1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1140

Del.quantity cm3/ 1000H: 53,0...59,0

Start:

1/min: 100 Speed Del.quantity

cm3/1000H.: 60,0 mind

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 500 1st speed

mm: 1,5...2,3 mm: (1,2...2,7) 1/min: 750 TD travel

2nd speed

TD travel

mm: 3,4...3,8 mm: (2,9...4,3)

1/min: 1100 3rd speed

mm: 5,2...6,0 mm: (4,9...6,3) TD travel

Supply-pump pressure characteristic:

1st speed 1/min: 500

Supply-pump

bar: 2,4...3,0 1/min: 750 pressure

Supply-pump bar: 3,5...4,1 1/min: 1100 pressure 3rd speed Supply-pump bar: 4,8...5,4 pressure Overflow quantity at overflow valve: 1/min: 500 1st speed Oveflow : 41...83 quantity cm3/10s: (26...98) 1/min: 1100 2nd speed : 55...138 Overflow quantity cm3/10s: (40...153) Delivery-quant. and breakaway char .: 1/min: 1220 1st speed Del.quantity cm3/: 0,0...3,0 1000H.: -2nd speed 1/min: 1160 Del.quantity cm3/: 15,0...45,0 1000H.: -3rd speed 1/min: 1140 Del.quantity cm3/: 53,0...59,0 1000H.: (50,0...62,0) 1/min: 1100 4th speed Del.quantity cm3/: 66,5...69,5 1000H.: (65,0...71,0) 5th speed 1/min: 900
Del.quantity cm3/: 71,5...72,5
1000H.: (69,0...75,0) 1/min: 750 6th speed Del.quantity cm3/: 70,5...74,5 1000H.: (68,5...76,5) 7th speed 1/min: 500 Del.quantity cm3/: 56,0...64,0 1000H.: (54,0...66,0) Zero delivery (stop): Mech. shutoff: 1/min: 1100 Speed Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: 1/min: 375 volt: 24,0 Speed ELAB Del.quantity cm3/: 0,0...3,0 1000H.: -Idle delivery: 1/min: 375 1st speed Del.quantity cm3/: 8,0...14,0 1000H.: (6,0...16,0)

1/min: 450

Del.quantity cm3/: 0,0...4,0 1000H.: -Automatic starting fuel delivery: 1/min: 130 1st speed Del.quantity cm3/: -1000H: 60,0 2nd speed 1/min: 240 Del.quantity cm3/: -max. 1000H: 60,0 Shutoff electromagnet: Cut-in min. voltage : 10,0 : 12,0 Rated voltage Mounting and assembly dimensions: Designation mm : 5,0...5,4 KF mm mm : 0,8...1,2MS SVS max. mm : 1.4Remarks: Heavy-duty fuel-injection pump for DI-engines: only test using timingdevice-travel measuring device with metal jacket Pushing electromagnet.

Note inst. in remarks column

: CUM 5,9 W46 Test sheet Edition : 03.05.90

replaces

: ISO 4113 Calibrating oil

: VE 6/12F1100 R381-1 Injection pump

: 0 460 426 153 Type number

Customer Part-No.: 3 916 977

Customer-specific information

Customer : CDC

: 6 BT-5.9 IND. Engine

k: 104 1/mi: 2200 Power Speed

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer: 40...48 : 42...50 electronically

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening .

bar: 250...253 pressure

Perforated-plate

mm : 0.5diameter

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

Prestroke mm : 0.3

(from BDC): +0.02(0.04)

Start of delivery block

mm: 1,5 Piston stroke

mm: +0,02(0,06)

Outlet : D

Injection-pump setting values Test specifications in parentheses Timing-device travel:

1/min: 750 Speed

Setting value mm: 3,4...3,8

Supply-pump pressure:

1/min: 750 Speed Setting value bar: 3,5...4,1

Full-load del. w/out charge press.:

 $1/\min : 750$ Speed

Del.quantity cm3/

1000H.: 71,5...72,5

cm3/: 4,0 Dispersion

1000H.: (4,5)

Low-idle speed regulation:

1/min: 375 Speed Del.quantity cm3/ 1000H.: 8,0...14,0

cm3/: 5,5 Dispersion 1000H.: (7,0)

Full-load speed regulation:

1/min: 1140

Del.quantity cm3/

1000H: 53,0...59,0

Start:

1/min: 100 Speed

Del.quantity cm3/1000H.: 60,0 mind

Inspection—pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 500 1st speed

mm: 1,5...2,3 TD travel

mm: (1,2...2,7)

1/min: 750 2nd speed

TD travel

mm: 3,4...3,8 mm: (2,9...4,3)

1/min: 1100 3rd speed

mm: 5, 2...6, 0TD travel

mm: (4,9...6,3)

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

bar: 2,4...3,0 1/min: 750 pressure

Supply-pump bar: 3,5...4,1 1/min: 1100 pressure 3rd speed Supply-pump bar: 4,8...5,4 pressure Overflow quantity at overflow valve: 1st speed 1/min: 500 : 41...83 Oveflow cm3/10s: (26...98) quantity 1/min: 1100 2nd speed : 55...138 Overflow quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1/min: 1220 1st speed Del.quantity cm3/: 0,0...3,0 1000H.: -1/min: 1160 cm3/: 15,0...45,0 2nd speed Del.quantity cms/...
1000H.: -1/min: 1140 3rd speed Del.quantity cm3/: 53,0...59,0 1000H.: (50,0...62,0) 4th speed 1/min: 1100
Del.quantity cm3/: 66,5...69,5
1000H.: (65,0...71,0)
5th speed 1/min: 900 Del.quantity cm3/: (1/3....75,0) 6th speed 1/min: 750
Del.quantity cm3/: 70,5...74,5
1000H.: (68,5...76,5) 1/min: 500 7th speed Del.quantity cm3/: 56,0...64,0 1000H.: (54,0...66,0) Zero delivery (stop): Mech. shutoff: 1/min: 1100 Speed Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: Speed 1/min: 375 ELAB volt: 24,0 Del.quantity cm3/: 0,0...3,0 max. 1000H.: -Idle delivery: 1/min: 375 1st speed Del.quantity cm3/: 8,0...14,0 1000H.: (6,0...16,0)

1/min: 450

Del.quantity cm3/: 0,0...4,0 1000H.: -Automatic starting fuel delivery: 1/min: 130 1st speed Del.quantity cm3/: -1000H: 60,0 ind. 1/min: 240 2nd speed Del.quantity cm3/: -1000H: 60,0 Shutoff electromagnet: Cut-in min. voltage : 20,0 Rated voltage : 24,0 Mounting and assembly dimensions: Designation K mm : 5,0...5,4 KF : 0,8...1,2 MS mm SVS max. : 1,4 mm Remarks: Heavy-duty fuel-injection pump for DI-engines: only test using timingdevice-travel measuring device with metal jacket Pushing electromagnet.

Note inst. in remarks column

: CUM 5.9 W8 Test sheet : 20.04.90 Edition : 25.10.89 replaces Calibrating oil : ISO 4113

: VE 6/12F1100 R381-2 Injection pump

: 0 460 426 154 Type number

Customer-specific information

Customer : CDC

: 6 BT - 5.9 IND. Engine

k: 89.0 Power 1/mi: 2200 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening |

bar: 250...253 pressure

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

mm: 0.3Prestroke

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke mm: 1.5

mm: +-0.02(0.06)

Outlet : D

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 750 Speed Setting value mm: 3.4...3.8

Supply-pump pressure:

1/min: 750 Setting value bar: 3.5...4.1

Full-load del. w/out charge press.:

1/min: 750 Speed

Del.quantity cm3/ 1000H.: 62.0...63.0

cm3/: 4.0Dispersion

1000H.: (4.5)

Low-idle speed regulation:

Speed 1/min: 375

Deliquantity cm3/

1000H.: 10.0...12.0 cm3/: 5.5

Dispersion 1000H.: (7.0)

Full-load speed regulation:

Speed 1/min: 1150

Del.quantity cm3/ 1000H: 39.0...45.0

Start:

Speed 1/min: 100 Del.quantity

cm3/1000H.: 70.0 mind

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 500 1st speed

mm: 1.5...2.3 mm: (1.2...2.6) TD travel

1/min: 750 2nd speed

TD travel mm: 3.4...3.8

mm: (2.9...4.3)

3rd speed TD travel

1/min: 1100 mm: 5.6...6.4 mm: (5.3...6.7))

Supply-pump pressure characteristic:

1st speed 1/min: 500

Supply-pump

bar: 2.4...3.0 1/min: 750 pressure

Supply-pump bar: 3.5...4.1 pressure 3rd speed 1/min: 1100 Supply-pump bar: 4.8...5.4 pressure Overflow quantity at overflow valve: 1st speed 1/min: 500 Oveflow : 41...83 cm3/10s: (26...98) quantity 2nd speed 1/min: 1100 Overflow : 55...138 quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1/min: 1250 1st speed Del.quantity cm3/: 15.0...55.0 1000H.: (15.0...55.0) 3rd speed 1/min: 1150 Del.quantity cm3/: 39.0...45.0 1000H.: (36.0...48.0) 1/min: 1100 4th speed Del.quantity cm3/: 59.0...62.0 1000H.: (57.5...63.5) 1/min: 900 5th speed 1/min: 750 6th speed Del.quantity cm3/: 62.0...63.0 1000H.: (59.5...65.5) 7th speed 1/min: 500 Del.quantity cm3/: 57.0...65.0 1000H.: -Zero delivery (stop): Mech. shutoff: 1/min: 1100 Speed Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: 1/min: 375 Speed volt: -Del.quantity cm3/: 0.0...3.0 max. 1000H.: -Idle delivery: 1/min: 375 1st speed Del.quantity cm3/: 10...12 1000H.: (6.0...16.0) 2nd speed 1/min: 500 2nd speed

Del.quantity cm3/: 0.0...4.0
1000H.: (0.0...4.0)

Automatic starting fuel delivery:

1st speed 1/min: 130
Del.quantity cm3/: ind. 1000H: 70.0

2nd speed 1/min: 300
Del.quantity cm3/: max. 1000H: 80.0

Shutoff electromagnet:

Cut-in
min. voltage : 20.0
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation K mm : KF mm : 5.0...5.4
MS mm : 1.2...1.6
SVS max. mm : -

Remarks:
: C.D.C. # 391 6975
Heavy-duty fuel-injection pump for
DI-engines: only test using timingdevice-travel measuring device with
metal jacket

Note inst. in remarks column

: CUM 5.9 W48 Test sheet : 03.05.90 Edition

replaces

Calibrating oil : ISO 4113

: VE 6/12F1100 R381-2 Injection pump

: 0 460 426 154 Type number

Customer Part-No.: 3 916 968

Customer-specific information

: CDC Customer

: 6 BT - 5.9 IND.Engine

k: 91.0 Power 1/mi: 2200 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Openina

bar: 250...253 pressure

Perforated-plate

diameter mm:0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

mm:0.3Prestroke

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke mm: 1.5

mm: +-0.02(0.06)

: D Outlet

Injection-pump setting values Test specifications in parentheses Timing-device travel:

1/min: 750 Setting value mm: 3.4...3.8

Supply-pump pressure:

1/min: 750 Speed Setting value bar: 3.5...4.1

Full-load del. w/out charge press.:

 $1/\min : 750$ Speed

Del.quantity cm3/ 1000H.: 62.0...63.0

cm3/: 4.0 Dispersion

1000H.: (4.5)

Low-idle speed regulation:

1/min: 375 Speed

Del.quantity cm3/ 1000H.: 10.0...12.0

cm3/: 5.5 Dispersion 1000H.: (7.0)

Full-load speed regulation:

1/min: 1150

Del.quantity cm3/

1000H: 39.0...45.0

Start:

1/min: 100 Speed Del.quantity

cm3/1000H.: 70.0 mind

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500

TD travel mm: 1.5...2.3 mm: (1.2...2.6)

1/min: 750 2nd speed TD travel

mm: 3.4...3.8 mm: (2.9...4.3)

1/min: 1100 3rd speed

TD travel mm: 5.6...6.4

mm: (5.3...6.7))

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

bar: 2.4...3.0 pressure

1/min: 750 2nd speed

Supply-pump bar: 3.5...4.1 pressure 1/min: 1100 3rd speed Supply-pump bar: 4.8...5.4 pressure Overflow quantity at overflow valve: 1/min: 500 1st speed : 41...83 Oveflow quantity cm3/10s: (26...98) 1/min: 1100 2nd speed Overflow : 55...138 quantity cm3/10s: (40...153) Delivery-guant. and breakaway char.: 1/min: 1250 1st speed Del.quantity cm3/: 0.0...3.0 1000H.: (0.0...3.0)
2nd speed 1/min: 1170
Del.quantity cm3/: 15.0...55.0
1000H.: (15.0...55.0) 1/min: 1150 3rd speed Del.quantity cm3/: 39.0...45.0 1000H.: (36.0...48.0) 4th speed 1/min: 1100 Del.quantity cm3/: 59.0...62.0 1000H.: (57.5...63.5) 1/min: 900 5th speed Del.quantity cm3/: 61.5...64.5 1000H.: (59.5...66.5) 1/min: 750 6th speed Del.quantity cm3/: 62.0...63.0 1000H.: (59.5...65.5) 1/min: 500 7th speed Del.quantity cm3/: 57.0...65.0 1000H.: -Zero delivery (stop): Mech. shutoff: 1/min: 1100 Speed Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: Speed 1/min: 375 ELAB volt: -Del.quantity cm3/: 0.0...3.0 max. 1000H.: -Idle delivery: 1/min: 375 cm3/: 10...12 1st speed Del.quantity cm3/: 10....2 1000H.: (6.0...16.0)

1/min: 500

Del.quantity cm3/: 0.0...4.0 1000H.: (0.0...4.0)

Automatic starting fuel delivery:

1/min: 130 1st speed Del.quantity cm3/: -ind. 1000H: 70.0

1/min: 300 2nd speed Del.quantity cm3/: -max. 1000H: 80.0

Shutoff electromagnet:

Cut-in

min. voltage : 10.0 : 12.0 Rated voltage

***unting and assembly dimensions:

Designation

K mm KF : 5.0...5.4 : 1.2...1.6 MS mm SVS max. mm :

Remarks:

Heavy-duty fuel-injection pump for DI-engines: only test using timing-device-travel measuring device with metal jacket

Note inst. in remarks column

: CUM 5.9 W47 Test sheet Edition : 03.05.90

replaces

Calibrating oil : ISO 4113

Injection pump : VE 6/12F1100 R381-2

: 0 460 426 154 Type number Customer Part-No. : 3 916 974

Customer-specific information

Customer : CDC

Engine : 6 BT - 5.9

k: 92,5 Power 1/mi: 2400 Speed

TEST BENCH REQUIREMENTS

Calibrating oil return temp.

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

bar: 250...253 pressure

Perforated plate

mm : 0.5 diameter

Test ini. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Lenath

Start of delivery

mm: 0.3 Prestroke

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke mm: 1.5

mm: +0.02(0.06)

Outlet : D

Injection-pump setting values Test specifications in parentheses Timing-device travel:

1/min: 750 Setting value mm: 3.4...3.8

Supply-pump pressure:

1/min: 750 Speed Setting value bar: 3.5...4.1

Full-load del. w/out charge press.:

1/min: 750 Speed

Del.quantity cm3/ 1000H.: 62.5...63.5

cm3/: 4.0 Dispersion 1000H .: (4.5)

Low-idle speed regulation:

1/min: 340 Speed

Del.quantity cm3/ 1000H.: 8,0...14,0 cm3/: 5.5

Dispersion 1000H.: (7.0)

Full-load speed regulation:

1/min: 1280

Del.quantity cm3/

1000H: 32.0...38.0

Start:

1/min: 100 Speed Del.quantity

cm3/1000H.: 75.0 mind

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed

1/min: 500 nm: 1.5...2.3 nm: (1.2...2.6) TD travel

1/min: 750 2nd speed

mm: 3.4...3.8 TD travel

mm: (2.9...4.3)

3rd speed 1/min: 1100 TD travel

mm: 5.6...6.4 mm: (5.3...6.7))

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

bar: 2.4...3.0 pressure

1/min: 750 2nd speed

amua-y Jaau S bar: 3.5...4.1 pressure 1/min: 1100 3rd speed Supply-pump bar: 4.8...5.4 pressure Overflow quantity at overflow valve: 1st speed 1/min: 500 Oveflow : 41...83 cm3/10s: (26...98) quantity 2nd speed 1/min: 1100 Overflow : 55...138 quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1st speed 1/min: 1350 Del.quantity cm3/: 0.0...15,0 1000H.: -1/min: 1330 2nd specu Del.quantity cmb/: 1000H.: -2nd speed cm3/: 15.0...55.0 3rd speed 1/min: 1280 Del.quantity cm3/: 32.0...38.0 1000H.: (29.0...41.0) 1/min: 1200 4th speed Del.quantity cm3/: 59,5...62,5 1000H.: (58.0...64,0) 1/min: 1100 5th speed Del.quantity cm3/: 60.3...65.5) 1/min: 750 6th speed Del.quantity cm3/: 02.3....66,0) 1/min: 500 7th speed Del.quantity cm3/: 55,0...63,0 1000H.: (53,0...65,0) Zero delivery (stop): Mech. shutoff: Speed 1/min: 1100 Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: Speed 1/min: 340 ELAB volt: -Del.quantity cm3/: 0.0...3.0 1000H.: max. Idle delivery: 1/min: 340 1st speed Del.quantity cm3/: 8,0...14,0 1000H.: (6.0...16.0) 1/min: 500

Del.quantity cm3/: 0.0...4.0 1000H.: -

Automatic starting fuel delivery:

1/min: 130 1st speed Del.quantity cm3/: -1000H: 70.0 ind.

1/min: 300 2nd speed Del.quantity cm3/: -1000H: 80.0

Shutoff electromagnet:

Cut-in

min. voltage : 10.0 : 12.0 Rated voltage

Mounting and assembly dimensions:

Designation

K : 5.0...5.4 KF mm : 1.2...1.6 MS mm

SVS max. mm

Remarks:

Heavy-duty fuel-injection pump for DI-engines: only test using timingdevice-travel measuring device with metal jacket

Note inst. in remarks column

: CUM 5.9 W13 Test sheet : 20.04.90 Edition : 15.11.89 replaces : ISO 4113 Calibrating oil

: VE 6/12F1100 R381-3 Injection pump

: 0 460 426 155 Type number

Customer-specific information

Customer : CDC

: 6 BT - 5.9 IND.Engine

k: 105 Power 1/mi: 2100 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40...48 : 42...50 electronically

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

bar: 250...253 pressure

Perforated-plate

diameter mm : 0.5

Test inj. tubing : 1 680 750 017

: 6 Outside diameter x Wall thickness : 2 mm: 840 x Length

Start of delivery

Prestroke

e mm: 0.3 (from BDC): +0.02(0.04)

Start of delivery block mm: 1.5 Piston stroke mm: +-0.02(0.06)

: D Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 750 Speed Setting value mm: 3.4...3.8

Supply-pump pressure:

1/min: 750 Setting value bar: 3.7...4.3

Full-load del. w/out charge press.:

1/min : 750 Speed

Del.quantity cm3/

1000H.: 75,0...76,0 cm3/: 4.0

Dispersion 1000H.: (4.5)

Low-idle speed regulation:

1/min: 375

Del.quantity cm3/ 1000H.: 10.0...12.0 Dispersion cm3/: 5.5 1000H.: (7.0)

Full-load speed regulation:

Speed 1/min: 1100

Del.quantity cm3/ 1000H: 52.0...58.0

Start:

17min: 100 Speed Del.quantity cm3/1000H.: 60.0 mind

Inspection pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 500 1st speed

mm: 1.3...2.1 TD travel mm: (1.0...2.4) 1/min: 750

2nd speed

mm: 3.4...3.8 mm: (2.9...4.3) TD travel

1/min: 1050 3rd speed

mm: 5.0...5/8TD travel mm: (4,7...6,1)

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

pressure bar: 2.6...3.2

1/min: 750 2nd speed

Supply-pump bar: 3.7...4.3 pressure 1/min: 1050 3rd speed Supply-pump bar: 4.9...5.5 pressure 1st speed Overflow quantity at overflow valve: ind. 1/min: 500 1st speed Oveflow : 41...83 2nd speed quantity cm3/10s: (26...98) 2nd speed 1/min: 1050 : 55...138 Overflow quantity cm3/10s: (40...153) Delivery-quant. and breakaway char .: Cut-in min. voltage Rated voltage 1/min: 1200 1st speed Del.quantity cm3/: 0.0...3.0 1000H.: (0.0...3.0) 2nd speed 1/min: 1130 Del.quantity cm3/: 15.0...45.0 2nd specu Del.quantity cm3/: 1 Designation Κ 1/min: 1100 KF 3rd speed Del.quantity cm3/: 52.0...58.0 1000H.: (49.0...61.0) MS SVS max. 4th speed 1/min: 1050
Del.quantity cm3/: 69,5...72,5
1000H.: (68,0...74,0) Remarks: 1/min: 900 5th speed Del.quantity cm3/: 72,5...(7),5 1000H.: (70,5...77,5) 6th speed 1/min: 750 Del.quantity cm3/: 75,0...76,0 1000H.: (72,5...78.5) metal iacket 1/min: 500 7th speed Del.quantity cm3/: 61,5...69,5 1000H.: (59,5...71,5) Zero delivery (stop): Mech. shutoff: 1/min: 1050 Speed Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: 1/min: 375 Speed ELAB volt: -Del.quantity cm3/: 0.0...3.0 max. 1000H.: -Idle delivery: 1/min: 375 cm3/: 10,0...12, 1st speed Del.quantity 1000H.: (6.0...16.0)

Del.quantity cm3/: 0.0...4.0 1000H.: -Automatic starting fuel delivery: 1/min: 130 Del.quantity cm3/: -1000H: 60.0 1/min: 240 Del.quantity cm3/: - max. 1000H: 60.0 Shutoff electromagnet: : 10.0 : 12.0 Mounting and assembly dimensions: mm : 5.0...5.4 mm : 0,8...1.2 mm mm : C.D.C. # 391 6923 Heavy-duty fuel-injection pump for DI-engines: only test using timingdevice-travel measuring device with

2nd speed

1/min: 450

Note inst. in remarks column

: CUM 5.9 W50 Test sheet Edition : 03.05.90

replaces

: ISO 4113 Calibrating oil

: VE 6/12F1100 R381-3 Injection pump

Type number : 0 460 426 155 Customer Part-No. : 3 916 923

Customer-specific information

: CDC Customer

Engine : 6 BT - 5.9 IND.

k: 105 1/mi: 2100 Power Speed

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer: 40...48 : 42...50 electronically

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening .

bar: 250...253 pressure

Perforated-plate

mm: 0.5 diameter

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery

Prestroke mm : 0.3

(from BDC): +-0.02(0.04)

Start of delivery block mm: 1.5 Piston stroke

mm: +-0.02(0.06)

Outlet

Injection pump setting values Test specifications in parentheses Timing-device travel:

1/min: 750

Setting value mm: 3.4...3.8

Supply-pump pressure:

1/min: 750 Speed Setting value bar: 3.7...4.3

Full-load del. w/out charge press.:

Speed $1/\min : 750$ Del.quantity cm3/ 1000H.: 75,0...76,0

cm3/: 4.0Dispersion

1000H.: (4.5)

Low-idle speed regulation:

1/min: 375 Speed

Del.quantity cm3/ 1000H.: 10.0...12.0

cm3/: 5.5Dispersion

1000H.: (7.0)

Full-load speed regulation:

1/min: 1100

Del.quantity cm3/

1000H: 52.0...58.0

Start:

Speed 1/min: 100 Del.quantity

cm3/1000H.: 60.0 mind

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 500 1st speed

mm: 1.3...2.1 TD travel

mm: (1.0...2.4)

2nd speed

1/min: 750 mm: 3.4...3.8 TD travel mm: (2.9...4.3)

1/min: 1050 3rd speed

TD travel mm: 5.0...5,8

mm: (4,7...6,1)

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

bar: 2.6...3.2 1/min: 750 pressure

Supply-pump bar: 3.7...4.3 pressure 3rd speed 1/min: 1050 Supply-pump bar: 4.9...5.5 pressure Overflow quantity at overflow valve: 1st speed Oveflow 1/min: 500 : 41...83 quantity cm3/10s: (26...98) 2nd speed 1/min: 1050 Overflow : 55...138 quantity cm3/10s: (40...153) Delivery quant. and breakaway char .: 1st speed 1/min: 1200 Del.quantity cm3/: 0.0...3.0 1000H.: (0.0...3.0) 2nd speed 1/min: 1130 Del.quantity cm3/: 15.0...45.0 2nd specu Del.quantity cmb/. ... 1000H.: -1/min: 1100 3rd speed 3rd speed 1/min: 1100
Del.quantity cm3/: 52.0...58.0
1000H.: (49.0...61.0)
4th speed 1/min: 1050
Del.quantity cm3/: 69,5...72,5
1000H.: (68,0...74,0) 5th speed 1/min: 900
Del.quantity cm3/: 72,5...75,5
1000H.: (70,5...77,5)
6th speed 1/min: 750 Del.quantity cm3/: 75,0...76,0 1000H.: (72,5...78.5) 1/min: 500 7th speed Del.quantity cm3/: 61,5...69,5 1000H.: (59,5...71,5) Zero delivery (stop): Mech. shutoff: 1/min: 1050 Speed Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: 1/min: 375 Speed volt: -Del.quantity cm3/: 0.0...3.0 max. 1000H.: -Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 10,0...12, 1000H.: (6.0...16.0)

1/min: 450

Del.guantity cm3/: 0.0...4.0 1000H.: -Automatic starting fuel delivery: 1/min: 130 1st speed Del.quantity cm3/: -1000H: 60.0 1/min: 240 2nd speed Del.quantity cm3/: - max. 1000H: 60.0 Shutoff electromagnet: Cut-in : 20.0 min. voltage Rated voltage : 24.0 Mounting and assembly dimensions: Designation K mm KF : 5.0...5.4 : 0,8...1.2 MS mm SVS max. mm Remarks:

Heavy-duty fuel-injection pump for DI-engines: only test using timing-device-travel measuring device with metal jacket

Note inst. in remarks column

: CUM 5,9 W14 Test sheet : 20.04,90 Edition replaces : 15.11.89 : ISO 4113 Calibrating oil

: VE 6/12F1100 R381-4 Injection pump

: 0 460 426 156 Type number

Customer-specific information

: CDC Customer

: 6 BT-5.9 IND. Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening |

bar: 250...253 pressure

Perforated plate

diameter mm: 0.5

Test ini. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm : 840 x Length

Start of delivery

Prestroke mm: 0,3

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke mm: 1,5

mm: +-0.02(0.06)

Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900 Setting value mm: 4,2...4,6 Supply-pump pressure:

1/min: 900

Setting value bar: 4,7...5,3

Full-load del. w/out charge press.:

1/min: 1000

Del.quantity cm3/ 1000H.: 67,0...68,0 Dispersion cm3/: 4,0 1000H.: (4,5)

Low-idle speed regulation:

1/min: 400 Speed

Del.quantity cm3/ 1000H.: 11,0...13,0

cm3/: 5,5 Dispersion 1000H.: (7,0)

Full-load speed regulation:

1/min: 1150 Speed

Del.quantity cm3/ 1000H: 44,3...50,3

Start:

1/min: 100 Speed Del.quantity

mind cm3/1000H.: 70,0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 750 1st speed

mm: 2,9...3,7 mm: (2,6...4,0) TD travel

1/min: 900 2nd speed

TD travel

mm: 4,2...4,6 mm: (3,7...5,1)

1/min: 1100 3rd speed TD travel

mm: 5,5...6,3 mm: (5,2...6,6)

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

bar: 2,9...3,5 1/min: 750 pressure

2nd speed

Supply-pump

bar: 4,0...4,6 pressure 1/min: 900 3rd speed

NO6

Supply-pump bar: 4,7...5,3 pressure 1/min: 1100 4th speed Supply-pump bar: 5,5...6,1 pressure Overflow quantity at overflow valve: 1st speed 1/min: 500 : 41...83 Oveflow cm3/10s: (26...98) quantity 1/min: 1100 2nd speed Overflow : 55...138 quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1/min: 1240 1st speed Del.quantity cm3/: 0,0...3,0 1000H.: -2nd speed 1/min: 1180
Del.quantity cm3/: 15,0...55,0
1000H.: -1/min: 1150 3rd speed Del.quantity cm3/: 44,3...50,3 1000H.: (41,3...53,3) 1/min: 1100 4th speed Del.quantity cm3/: 64,5...67,5 1000H.: (63,0...69,0) 5th speed 1/min: 1000 Del.quantity cm3/: 67,0...68,0 1000H.: (64,5...70,5) 6th speed 1/min: 750 Del.quantity cm3/: 83,0...87,0 1000H.: (81,0...89,0) Zero delivery (stop): Mech. shutoff: 1/min: 1100 Speed Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: 1/min: 400 Speed volt: -Del.quantity cm3/: 0,0...3,0 Idle delivery: 1/min: 400 1st speed Del.quantity cm3/: 11,0..13,0 1000H.: (7,0...17,0) 1/min: 500 2nd speed Del.quantity cm3/: 0,0...4,0

1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130 Del.quantity cm3/: -1000H: 80,0 ind. 1/min: 250 2nd speed Del.quantity cm3/: -max. 1000H: 100,0 Shutoff electromagnet: Cut-in min. voltage : 20,0 Rated voltage : 24,0 Mounting and assembly dimensions: Designation mm : 5,0...5,4 KF mm : 1,3...1,7 mm : 2,2 MS SVS max. Remarks: : C.D.C. # 391 6946 Heavy-duty fuel-injection pump for DI-engines: only test using timingdevice-travel measuring device with metal jacket

Note inst. in remarks column

: CUM 5,9 W51 Test sheet : 03.05.90 Edition

replaces

: ISO 4113 Calibrating oil

: VE 6/12F1100 R381-4 Injection pump : 0 460 426 156

Type number Type number : U 46U 426 Customer Part-No. : 3 916 945

Customer-specific information

Customer : CDC

: 6 BT-5.9 IND. Engine

k: 93 Power 1/mi: 2200 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40...48 : 42...50 electronically

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening |

bar: 250...253 pressure

Perforated plate

mm:0.5diameter

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

mm : 0,3Prestroke

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke mm: 1,5

mm: +0.02(0.06)

Outlet : D

Injection-pump setting values Test specifications in parentheses Timing-device travel:

1/min: 900 Setting value mm: 4,2...4,6

Supply-pump pressure:

1/min: 900 Speed

Setting value bar: 4,7...5,3

Full-load del. w/out charge press.:

1/min: 1000 Speed

Del.quantity cm3/

1000H.: 67,0...68,0

cm3/: 4,0 Dispersion

1000H.: (4,5)

Low-idle speed regulation:

1/min: 400 Speed

Del.quantity cm3/ 1000H.: 11,0...13,0 Dispersion cm3/: 5,5

1000H.: (7,0)

Full-load speed regulation:

1/min: 1150

Del.quantity cm3/

1000H: 44,3...50,3

Start:

1/min: 100 Speed

Del.quantity cm3/1000H.: 70,0 mind

Inspection pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 750 1st speed

mm: 2,9...3,7 mm: (2,6...4,0) TD travel

1/min: 900 2nd speed

mm: 4,2...4,6 mm: (3,7...5,1) TD travel

1/min: 1100 3rd speed TD travel

mm: 5,5...6,3 mm: (5,2...6,6)

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

bar: 2,9...3,5 1/min: 750 pressure

Supply-pump pressure bar: 4,0...4,6 1/min: 900 3rd speed Supply-pump bar: 4,7...5,3 pressure 1/min: 1100 4th speed Supply-pump bar: 5,5...6,1 pressure Overflow quantity at overflow valve: 1/min: 500 1st speed Oveflow : 41...83 cm3/10s: (26...98) quantity 1/min: 1100 2nd speed : 55...138 Overflow quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1/min: 1240 1st speed Del.quantity cm3/: 0,0...3,0 1000H.: -1/min: 1180 2nd speed Del.quantity cm3/: 15,0...55,0 1000H.: -1/min: 1150 3rd speed Del.quantity cm3/: 44,3...50,3 1000H.: (41,3...53,3) 1/min: 1100 4th speed Del.quantity cm3/: 64,5...67,5 1000H.: (63,0...69,0) 1/min: 1000 5th speed Del.quantity cm3/: 67,0...68,0 1000H.: (64,5...70,5) 6th speed 1/min: 750 Del.quantity cm3/: 83,0...87,0 1000H.: (81,0...89,0) Zero delivery (stop): Mech. shutoff: 1/min: 1100 Speed Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: 1/min: 400 Speed ELAB volt: -Del.guantity cm3/: 0,0...3,0 Idle delivery: 1st speed 1/min: 400 Del.quantity cm3/: 11,0..13,0 1000H.: (7,0...17,0)

Del.quantity cm3/: 0,0...4,0 1000H.: -Automatic starting fuel delivery: 1/min: 130 1st speed Del.quantity cm3/: -1000H: 80,0 ind. 1/min: 250 2nd speed Del.quantity cm3/: -1000H: 100,0 Shutoff electromagnet: Cut-in : 10,0 min. voltage : 12,0 Rated voltage Mounting and assembly dimensions: Designation K mm : 5,0...5,4 KF : 1,3...1,7 MS mm SVS max. mm Remarks: Heavy-duty fuel-injection pump for DI-engines: only test using timingdevice-travel measuring device with metal jacket

2nd speed

1/min: 500

Note inst. in remarks column

: CUM 5,9 W36 Test sheet : 20.04.90 Edition

replaces

: ISO 4113 Calibrating oil

: VE 6/12F1050 R381-5 Injection pump

: 0 460 426 157 Type number

Customer-specific information

: CDC Customer

: 6 BT Engine

k: 93 Power 1/mi: 2100 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening

bar: 250...253 pressure

Perforated plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

Prestroke

e mm: 0,3 (from BDC): +-0,02(0,04)

Start of delivery block Piston stroke mm: 1,5

mm: +-0.02(0.06)

: D Outlet

Injection-pump setting values

Test specifications in parentheses

Timing-device travel:

1/min: 750 Speed

Setting value mm: 3,4...3,8

Supply-pump pressure:

1/min: 750

Setting value bar: 3,5...4,1

Full-load del. w/out charge press.:

1/min: 750 Speed

Del.quantity cm3/ 1000H.: 64,5...65,5

cm3/: 4,0 Dispersion

1000H.: (4,5)

Low-idle speed regulation:

1/min: 375 Speed

Del.quantity cm3/ 1000H.: 10,0...12,0 cm3/: 5,5 Dispersion 1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1100

Del.quantity cm3/

1000H: 46,0...52,0

Start:

1/min: 100 Speed

Del.quantity cm3/1000H.: 70,0 mind

Inspection—pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed

1/min: 500 mm: 1,5...2,3 mm: (1,2...2,6) TD travel

2nd speed 1/min: 750

mm: 3,4...3,8 mm: (2,9...4,3) TD travel

1/min: 1050 3rd speed TD travel

mm: 5,0...5,8

mm: (4,7...6,1)

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

bar: 2,4...3,0 1/min: 750 pressure

Automatic starting fuel delivery: Supply-pump bar: 3,5...4,1 pressure 1/min: 1050 1st speed 1/min: 130 3rd speed Del.quantity cm3/: -Supply-pump 1000H: 70,0 ind. bar: 4,6...5,2 pressure Overflow quantity at overflow valve: 2nd speed 1/min: 350 Del.quantity cm3/: -max. 1000H: 70,0 1/min: 500 1st speed Oveflow : 41...83 quantity cm3/10s: (26...98) Shutoff electromagnet: 1/min: 1050 2nd speed : 55...138 Cut-in Overflow quantity cm3/10s: (40...153) min. voltage : 20,0 Rated voltage : 24,0 Delivery-quant. and breakaway char .: Mounting and assembly dimensions: 1/min: 1250 1st speed Del.quantity cm3/: 0,0...3,0 Designation 1000H.: mm : 5,0...5,4 KF 1/min: 1130 mm 2nd speed Del.quantity cm3/: 15,0...55,0 1000H.: -: 1,3...1,7 MS mm SVS max. mm 1/min: 1100 3rd speed Del.quantity cm3/: 46,0...52,0 Remarks: 1000H.: (43,0...55,0) 1/min: 1050 : C.D.C. # 391 6933 Heavy-duty fuel-injection pump for 4th speed Del.quantity cm3/: 60,5...63,5 1000H.: (59,0...65,0) DI-engines: only test using timingdevice-travel measuring device with 1/min: 900 metal iacket 5th speed Del.quantity cm3/: 62,0...65,0 1000H.: (60,0...67,0) 1/min: 750 6th speed Del.quantity cm3/: 64,5...65,5 1000H.: (62,0...68,0) Zero delivery (stop): Mech. shutoff: Speed 1/min: 1050 Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: 1/min: 375 Speed ELAB volt: -Del.quantity cm3/: 0,0...3,0 1000H.: -Idle delivery: 1000H.: (6,0...16,0) 1/min: 500 2nd speed Del.quantity cm3/: 0,0...4,0 1000H.: -

Note inst. in remarks column

: CUM 5,9 W52 Test sheet : 03.05.90 Edition

replaces

: ISO 4113 Calibrating oil

: VE 6/12F1050 R381-5 Injection pump

: 0 460 426 157 Type number

Customer Part-No. : 3 916 933

· Customer-specific information

Customer : CDC

Engine : 6 BT

k: 93 Power 1/mi: 2100 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer: 40...48 : 42...50 electronically

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

bar: 250...253 pressure

Perforated-plate

diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery

mm : 0.3Prestroke

(from BDC): +0.02(0.04)

Start of delivery block mm: 1,5 Piston stroke

mm: +-0.02(0.06)

Outlet.

Injection pump setting values Test specifications in parentheses Timing-device travel:

1/min: 750 Speed

Setting value mm: 3,4...3,8

Supply-pump pressure:

1/min: 750 Speed Setting value bar: 3,5...4,1

Full-load del. w/out charge press.:

1/min: 750 Speed

Del.quantity cm3/ 1000H.: 64,5...65,5 Dispersion cm3/: 4,0

1000H : (4.5)

Low-idle speed regulation:

1/min: 375 Speed

Del.quantity cm3/ 1000H.: 10,0...12,0

cm3/: 5/5 Dispersion 1000H.: (7,0)

Full-load speed regulation:

1/min: 1100

Del.quantity cm3/

1000H: 46,0...52,0

Start:

1/min: 100 Speed Del.quantity

cm3/1000H.: 70.0 mind '

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 500 1st speed

mm: 1,5...2,3 TD travel

mm: (1,2...2,6)

2nd speed

1/min: 750 mm: 3,4...3,8 mm: (2,9...4,3) TD travel

1/min: 1050 3rd speed

mm: 5,0...5,8TD travel mm: (4,7...6,1)

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

bar: 2,4...3,0 1/min: 750 pressure

Supply-pump bar: 3,5...4,1 pressure 1/min: 1050 3rd speed Supply-pump bar: 4,6...5,2 pressure Overflow quantity at overflow valve: 1/min: 500 1st speed Oveflow : 41...83 cm3/10s: (26...98) quantity 1/min: 1050 2nd speed : 55...138 Overflow quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1st speed Del.quantity cm3/: u 1000H.: -1/min: 1250 1st speed cm3/: 0,0...3,01/min: 1130 cm3/: 15,0...55,0 2nd specific cms/...
1000H.: -2nd speed 1/min: 1100 3rd speed Del.quantity cm3/: 46,0...52,0 1000H.: (43,0...55,0) 1/min: 1050 4th speed Del.quantity cm3/: 60,5...63,5 1000H.: (59,0...65,0) 1/min: 900 5th speed Del.quantity cm3/: 62,u...07,0 1000H.: (60,0...67,0) 4th speed 1/min: 750 Del.quantity cm3/: 64,5...65,5 1000H.: (62,0...68,0) Zero delivery (stop): Mech. shutoff: Speed 1/min: 1050 Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: 1/min: 375 Speed ELAB volt: -Del.guantity cm3/: 0,0...3,0 1000H .: max. Idle delivery: 1/min: 375 1st speed Del.quantity cm3/: 10,0..12,0 1000H.: (6,0...16,0) 1/min: 500 2nd speed Del.quantity cm3/: 0,0...4,0 1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130 Del.quantity cm3/: ind. 1000H: 70,0

2nd speed 1/min: 350 Del.quantity cm3/: max. 1000H: 70,0

Shutoff electromagnet:

Cut-in

min. voltage : 10,0 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm : KF mm : 5,0...5,4
MS mm : 1,3...1,7

SVS max. mm :

Remarks:

Heavy-duty fuel-injection pump for DI-engines: only test using timing-device-travel measuring device with metal jacket

Note inst. in remarks column

: CUM 5,9 W26 Test sheet : 28.3.90 Edition

replaces

Calibrating oil : ISO 4113

: VE 6/12F1400 R387 Injection pump

: 0 460 426 163 Type number

Customer-specific information

Customer : CDC

Engine : 6 BTA-5,9 AUTO

k: 160 Power 1/mi: 2800 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 : 42...50 electronically

Inlet press., bar: 0,35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening |

bar: 250...253 pressure

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2

mm: 840 x Length

Start of delivery

Prestroke mm: 0,3

(from BDC): -+0.02(0.04)

Start of delivery block Piston stroke mm: 1,1

mm: +0.02(0.06)

Outlet |

Injection-pump setting values Test specifications in parentheses

Timing device travel:

Speed 1/min: 900 Charge press. hPa: 1000 Setting value mm: 4,2...4,6

Supply-pump pressure:

Speed 1/min: 900 Charge press. hPa: 1000 Setting value bar: 4,1...4,7

Full-load del. with charge press.:

Speed 1/min: 900 Charge press. hPa: 1000

Del.quantity cm3/ 1000H.: 67.0...68.0 Dispersion cm3/: 4.0 1000H : (4,5)

Full-load del. w/out charge press.:

Speed $1/\min : 500$

Del.quantity cm3/

1000H.: 30,0...31,5

Low-idle speed regulation:

1/min: 360 Speed Charge press. hPa: -

Del.quantity cm3/ 1000H.: 8,0...14,0

cm3/: 5,5 1000H.: (7,0) Dispersion

Full-load speed regulation:

1/min: 1530 Charge press. hPa: 1000 Del.quantity cm3/ 1000H: 49,0...55,0

Start:

1/min: 100 Speed Charge press. hPa: -Del.quantity mind cm3/1000H.: 45,0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 500 1st speed Charge press. hPa: 1000

mm: 0,4...1,2TD travel mm: (0,1...1,5) 1/min: 900

Charge press. hPa: TD travel mm:	1000	- 6th speed 1/min: 1100 - Charge press. hPa: 1000 - Del.quantity cm3/: 64,567,5
3rd speed 1/min: Charge press. hPa:	1100	- 1000H.: (62,569,5) - 7th speed 1/min: 900
TD travel mm:	5,56,3 (5,26,6)	- Charge press. hPa: 1000 - Del.quantity cm3/: 67,068,0 - 1000H.: (64,570,5)
Supply-pump pressur	e characteristic:	- 8th speed * 1/min: 500 - Charge press. hPa: -
1st speed 1/min: Charge press. hPa: Supply-pump	500	- Del.quantity cm3/: 30,531,5 - 1000H: (27,035,0) - 9th speed 1/min: 500
pressure bar: bar: 2nd speed 1/min:	2,43,0 (2,23,2)	- Charge press. hPa: 1000 - Del.quantity cm3/: 65,573,5
2nd speed 1/min: Charge press. hPa: Supply-pump	1000	- 1000H: - - - Zero de livery (stop):
pressure bar: bar:	4,14,7 (3,94,9)	- Mech. shutoff:
3rd speed 1/min: Charge press. hPa: Supply—pump	1400 +	- Speed 1/min: 1400 - Del.quantity cm3/: 03
pressure bar:	6,16,7 (5,96,9)	- 1000H.: - - Electr. shutoff:
Overflow quantity a	t overflow valve:	- Etectr. shatorr. - Speed - 1/min: 360
1st speed 1/min: Charge press. hPa: Oveflow :	- +	- Del.quantity cm3/: 0,03,0 - max. 1000H.: -
quantity cm3/10s: 2nd speed 1/min:	- +	- Idle delivery:
Charge press. hPa: Overflow: quantity cm3/10s:	1000 + 2050 +	- 1st speed 1/min: 360 - Del.quantity cm3/: 8,014,0 - 1000H.: (6,016,0)
Delivery-quant. and	breakaway char.:	- 2nd speed 1/min: 450 - Del.quantity cm3/: 0,04,0 - 1000H.: -
1st speed 1/min: Charge-air pressure point hPa:	-setting 	- - Automatic starting fuel delivery: -
Del.quantity cm3/: 1000H.:	59,060,0 (55,563,5)	- 1st speed 1/min: 300 - Del.quantity cm3/: - - ind. 1000H: 55,0
2nd speed 1/min: Charge press. hPa: Del.quantity cm3/:	1000	- ind. 1000H: 55,0 - - 2nd speed 1/min: 480
3rd speed 1/min:	- 1620	- Del.quantity cm3/: - - max. 1000H : 55,0
Charge press. hPa: Del.quantity cm3/: 1000H.:	15,055,0 +	- - Shutoff electromagnet: -
4th speed 1/min: Charge press. hPa: Del.quantity cm3/:	1530 1000 49,055,0	- Cut-in - min. voltage : 10,0 - Rated voltage : 12,0
1000H.: 5th speed 1/min:	(46,058,0) + 1400 +	- Mounting and assembly dimensions:
Charge press. hPa: Del.quantity cm3/: 1000H.:	61,564,5 (60,066,0)	- - Designation - K mm : -

KF mm : 5,0...5,4
MS mm : 1,3
SVS max. mm : 2,0
XK mm : XL mm : -

Remarks:

: C.D.C. # 391 6914

* Correction at adjusting nut (46)

Operate control lever after each manifold—pressure compensator pressure change.

Heavy-duty fuel-injection pump for DI-engines: only test using timing-device-travel measuring device with metal jacket

Note inst. in remarks column

: CUM 5,9 W37 Test sheet : 20.04.90 Edition

replaces

: ISO 4113 Calibrating oil

: VE 6/12F1000 R381-6 Injection pump

Type number : 0 460 426 164

Customer-specific information

: CDC Customer

: 6 BT Engine

k: 64 Power 1/mi: 2200 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40...48 : 42...50 electronically

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

bar: 250...253 pressure

Perforated-plate

mm: 0.5 diameter

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

Prestroke mm : 0.3

(from BDC): +0.02(0.04)

Start of delivery block mm: 1,5 Piston stroke

mm: +-0.02(0.06)

Outlet. : D

Injection pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 750 Speed

Setting value mm: 3,3...3,7

Supply-pump pressure:

1/min: 750

Setting value bar: 3,5...4,1

Full-load del. w/out charge press.:

1/min: 750 Speed

Del.quantity cm3/

1000H.: 46,5...47,5

cm3/: 4,0 Dispersion

1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 365

Del.quantity cm3/ 1000H.: 8,0...14,0 Dispersion cm3/: 5,5 1000H.: (7,0)

Full-load speed regulation:

1/min: 1050 Speed

Del.quantity cm3/

1000H: 30,0...36,0

Start:

1/min: 100 Speed

Del.quantity cm3/1000H.: 40.0 mind '

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500

mm: 1,1...1,9 mm: (0,8...2,2) TD travel

1/min: 750 2nd speed

mm: 3,3...3,7 mm: (2,8...4,2) 1/min: 1000 TD travel

3rd speed

TD travel mm: $5_2 3_1 ... 6_1$

mm: (5,0...6,4)

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

bar: 2,4...3,0 1/min: 750 pressure

Supply-pump pressure bar: 3,5...4,1 3rd speed 1/min: 1000 Supply-pump pressure bar: 4,6...5,2 Overflow quantity at overflow valve: 1/min: 600 1st speed : 41...83 Oveflow quantity cm3/10s: (26...98) 1/min: 1000 2nd speed : 55...138 Overflow quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1/min: 1150 1st speed Del.quantity cm3/: 0,0...3,0 1000H.: -1/min: 1060 2nd speed Del.quantity cm3/: 15,0...45,0 1000H.: -1/min: 1050 3rd speed Del.quantity cm3/: 30,0...36,0 1000H.: (27,0...39,0) 1/min: 1000 4th speed Del.quantity cm3/: 44,5...47,5 1000H.: (43,0...49,0) 1/min: 900 5th speed Del.quantity cm3/: 46,5...49,5 1000H.: (44,5...51,5) 1/min: 750 6th speed Del.quantity cm3/: 46,5...47,5 1000H.: (44,0...50,0) 1/min: 600 7th speed Del.quantity cm3/: 38,5...46,5 1000H.: (36,5...48,5) Zero delivery (stop): Mech. shutoff: 1/min: 1000 Speed Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: 1/min: 365 Speed volt: -Del.quantity cm3/: 0,0...3,0 max. 1000H.: -Idle delivery: 1/min: 365 1st speed Del.quantity cm3/: 8,0...14,0 1000H.: (6,0...16,0) 2nd speed 1/min: 450

Del.quantity cm3/: 0,0...4,0 1000H.: -Automatic starting fuel delivery: 1/min: 100 1st speed Del.quantity cm3/: -1000H: 40 1/min: 400 2nd speed Del.quantity cm3/: -max. 1000H: 65,0 Shutoff electromagnet: Cut-in min. voltage : 20,0 : 24,0 Rated voltage

Mounting and assembly dimensions:

Designation

K mm : KF mm : 5,0...5,4
MS mm : 1,0...1,4
SVS max. mm : 1,4

Remarks:

: C.D.C. # 391 6931 Heavy-duty fuel-injection pump for DI-engines: only test using timingdevice-travel measuring device with metal jacket

Note inst. in remarks column

: CUM 5,9 W53 Test sheet : 03.05.90 Edition

replaces

: ISO 4113 Calibrating oil

Injection pump : VE 6/12F1000 R381-6 : 0 460 426 164

Type number Customer Part-No.: 3 916 930

Customer-specific information

: CDC Customer

Engine : 6 BT

Power k: 64 1/mi: 2200 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

bar: 250...253 pressure

Perforated plate

mm:0.5diameter

Test ini. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm : 840

Start of delivery

Prestroke mm: 0,3

(from BDC): +0.02(0.04)

Start of delivery block

mm: 1,5 Piston stroke

mm: +-0.02(0.06)

Outlet.

Injection pump setting values Test specifications in parentheses Timing-device travel:

1/min: 750 Speed Setting value mm: 3,3...3,7

Supply-pump pressure:

1/min: 750 Speed Setting value bar: 3,5...4,1

Full-load del. w/out charge press.:

1/min: 750 Speed

Del.quantity cm3/

1000H.: 46,5...47,5

cm3/: 4,0 Dispersion

1000H.: (4,5)

Low-idle speed regulation:

1/min: 365 Speed

Del.quantity cm3/ 1000H.: 8,0...14,0

cm3/: 5,5 1000H.: (7,0) Dispersion

Full-load speed regulation:

1/min: 1050 Speed

Del.quantity cm3/

1000H: 30,0...36,0

Start:

1/min: 100 Speed Del.quantity

mind cm3/1000H.: 40,0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500

mm: 1,1...1,9 mm: (0,8...2,2) 1/min: 750 TD travel

2nd speed

mm: 3,3...3,7 mm: (2,8...4,2) TD travel

1/min: 1000 3rd speed TD travel

mm: 5,3...6,1 mm: (5,0...6,4)

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

bar: 2,4...3,0 1/min: 750 pressure

Supply-pump bar: 3,5...4,1 pressure 3rd speed 1/min: 1000 Supply-pump bar: 4,6...5,2 pressure Overflow quantity at overflow valve: 1/min: 600 1st speed Oveflow : 41...83 cm3/10s: (26...98) 1/min: 1000 quantity 2nd speed Overflow : 55...138 quantity cm3/10s: (40...153) Delivery-quant. and breakaway char .: 1/min: 1150 1st speed Del.quantity cm3/: 0,0...3,0 1000H.: -2nd speed 1/min: 1060 Del.quantity cm3/: 15,0...45,0 1000H.: -1/min: 1050 3rd speed Del.quantity cm3/: 30,0...36,0 1000H.: (27,0...39,0) 1/min: 1000 4th speed Del.quantity cm3/: 44,5...47,5 1000H.: (43,0...49,0) 1/min: 900 5th speed cm3/: 46,5...49,5 Del.quantity 1000H.: (44,5...51,5) 1/min: 750 6th speed Del.quantity cm3/: 46,5...47,5 1000H.: (44,0...50,0) 1/min: 600 7th speed Del.quantity cm3/: 38,5...46,5 1000H.: (36,5...48,5) Zero delivery (stop): Mech. shutoff: 1/min: 1000 Speed Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: 1/min: 365 Speed volt: -ELAB Del.quantity cm3/: 0,0...3,0 1000H.: max. Idle delivery: 1/min: 365 1st speed Del.quantity cm3/: 8,0...14,0 1000H.: (6,0...16,0)

1/min: 450

Del.quantity cm3/: 0,0...4,0 1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 100 Del.quantity cm3/: ind. 1000H: 40

2nd speed 1/min: 400 Del.quantity cm3/: max. 1000H: 65,0

Shutoff electromagnet:

Cut-in

min. voltage : 10,0 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm : KF mm : 5,0...5,4
MS mm : 1,0...1,4
SVS max. mm : 1,4

Remarks:

Heavy-duty fuel-injection pump for DI-engines: only test using timing-device-travel measuring device with metal jacket

Note inst. in remarks column

: CUM 5,9 W27 Test sheet Edition : 28.3.90

replaces

Calibrating oil : ISO 4113

: VE 6/12F1050 R373-6 Injection pump

: 0 460 426 172 Type number

Customer-specific information : CUMMINS Customer

Engine : 6 BTA5,9

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40...48 : 42...50 electronically

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 016

Opening |

bar: 207...210 pressure

Perforated plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

mm : 0.3Prestroke

(from BDC): -+0.02(0.04)

Start of delivery block Piston stroke mm: 1,6

mm: -40,02(0,06)

Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750 Charge press. hPa: 750 Setting value mm: 2,6...3,0

Supply-pump pressure:

1/min: 750 Speed Charge press. hPa: 750 Setting value bar: 4,9...5,5

Full-load del. with charge press.:

1/min: 750 Charge press. hPa: 750 Del.quantity cm3/

1000H.: 91.0...92,0 cm3/: 4,0 Dispersion 1000H : (4,5)

Full-load del. w/out charge press.:

1/min: 500

Del.quantity cm3/

1000H.: 66,0...67,0

Low-idle speed regulation:

Speed 1/min: 375 Charge press. hPa: -

Del.quantity cm3/ 1000H.: 21,5...25,5 Dispersion cm3/: 3,5 1000H.: (6,0)

Full-load speed regulation:

1/min: 1100 Speed Charge press. hPa: 750 Del.quantity cm3/

1000H: 64,5...70,5

Start:

1/min: 100 Speed Charge press. hPa: -Del.quantity mind cm3/1000H.: 35,0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500 Charge press. hPa: 750 TD travel

mm: 0,6...1,4 mm: (0,3...1,7) 1/min: 750

2nd speed Charge press. hPa: 750

TD travel

mm: 2,6...3,0 mm: (2,1...3,5)

3rd speed 1/min: Charge press. hPa: TD travel mm: mm: Supply-pump pressure	750 4,85,6 (4,55,9)	+ + + + + + + + + + + + + + + + + + + +	7th speed Charge press. Del.quantity	1000H.: 1/min: hPa: cm3/: 1000H.:	(84,090,0) 750 750 91,092,0 (87,594,5)	
1st speed 1/min: Charge press. hPa: Supply-pump pressure bar: bar: 2nd speed 1/min: Charge press. hPa: Supply-pump	750 3,84,4 (3,54,7) 750 750	+++++++++++++++++++++++++++++++++++++++	9th speed Charge press.	hPa: cm3/: 1000H: 1/min: hPa:	- 66,067,0 (62,570,5) 500 750 100,0108,0	
pressure bar: bar: 3rd speed 1/min: Charge press. hPa: Supply-pump pressure bar:	(4,65,8) 1100	+++++++++++++++++++++++++++++++++++++++	Zero delivery Mech. shutoff Speed Del.quantity	f: 1/min:	1050 03	
Overflow quantity at		+	Electr. shuto		775	
1st speed 1/min: Charge press. hPa: Oveflow: quantity cm3/10s: 2nd speed 1/min:	_ 1530 _	+ + + + + + + + + + + + + + + + + + + +	Speed Del.quantity max. 1 Idle delivery	:/cm3 :.HOOOH	0,03,0	
Charge press. hPa: Overflow: quantity cm3/10s:	750 2050	+++++++++++++++++++++++++++++++++++++++	1st speed Del.quantity	1/min:	375 21,525,5 (18,528,5)	
Delivery-quant. and 1st speed 1/min: Charge-air pressure-	600	++++++	2nd speed Del.quantity	1/min:	450	
point hPa: Del.quantity cm3/:	400 82,583,5 (79,087,0) 1170 750	+	Automatic sta 1st speed	arting ⁻ 1/min:	fuel delivery:	
		T T	Del.quantity		-	
1000H.: 3rd speed 1/min: Charge press. hPa: Del.quantity cm3/:	_ 1120 750	+ + + + + + + + + + + + + + + + + + + +	Del.quantity	1/min: cm3/: 1000H :	-	
4th speed 1/min:	1100	+	Shutoff elect	romagne	et:	
Charge press. hPa: Del.quantity cm3/: 1000H.: 5th speed 1/min:	64,570,5 (61,573,5)	†	Cut-in min. voltage Rated voltage		10,0 12,0	
Charge press. hPa: Del.quantity cm3/:	750 78,581,5	+	Mounting and assembly dimensions:			
6th speed 1/min: Charge press. hPa:		† † †	Designation K KF MS	mm : mm : mm :	- 5,05,4 1,31,7	

 SVS max.
 mm :

 XK
 mm :

 XL
 mm :

Remarks:

: C.D.C. # 390 7544

* Correction at adjusting nut (46)

Operate control lever after each manifold pressure compensator pressure change.

Heavy-duty fuel-injection pump for DI-engines: only test using timing-device-travel measuring device with metal jacket

Note inst. in remarks column

: CUM 5,9 W54 Test sheet Edition : 04.05.90

replaces

Calibrating oil : ISO 4113

: VE 6/12F1050 R381-7 Injection pump

: 0 460 426 177 Type number

Customer-specific information

: CDC Customer

Engine : 6 BT

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40...48 : 42...50 electronically

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening .

bar: 250...253 pressure

Perforated-plate

mm: 0.5 diameter

Test inj. tubing : 1 680 750 017

Outside diameter x Wall thickness : 2 mm: 840 x Length

Start of delivery

mm : 0.3Prestroke

(from BDC): +0.02(0.04)

Start of delivery block Piston stroke mm: 1,5

mm: +0,02(0,06)

Outlet

Injection pump setting values Test specifications in parentheses

Timing-device travel:

N24

1/min: 750 Speed

Setting value mm: 3,4...3,8

Supply-pump pressure:

1/min: 750 Speed Setting value bar: 3,7...4,3

Full-load del. w/out charge press.:

1/min: 750 Speed

Del.quantity cm3/

1000H.: 73,0...74,0

cm3/: 4,0Dispersion

1000H.: (4,5)

Low-idle speed regulation:

1/min: 375 Speed

Del.quantity cm3/ 1000H.: 8,0...14,0 Dispersion cm3/: 5,5 1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1100

Del.quantity cm3/ 1000H: 52,0...58,0

Start:

1/min: 100 Speed

Del.quantity cm3/1000H.: 60,0 mind

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500

mm: 1,2...2,0 mm: (0,9...2,3) 1/min: 750 TD travel

2nd speed

TD travel

mm: 3,4...3,8 mm: (2,9...4,3) 1/min: 1050

3rd speed

TD travel

mm: 4,9...5,7 mm: (4,6...6,0)

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

bar: 2,6...3,2 1/min: 750 pressure

2nd speed

Supply-pump

bar: 3,7...4,3 1/min: 1050 pressure 3rd speed

Automatic starting fuel delivery: Supply-pump bar: 4,9...5,5 pressure 1/min: 130 1st speed Overflow quantity at overflow valve: Del.quantity cm3/: -1000H: 60,0 ind. 1/min: 500 1st speed : 41...83 1/min: 240 Oveflow 2nd speed Del.quantity cm3/: -max. 1000H: 60,0 quantity cm3/10s: (26...98) 1/min: 1050 : 55...138 2nd speed Overflow quantity cm3/10s: (40...153) Shutoff electromagnet: Cut-in Delivery-quant. and breakaway char.: : 20,0 min. voltage 1/min: 1200 Rated voltage : 24,0 1st speed Del.quantity cm3/: 0,0...3,0 1000H.: -Mounting and assembly dimensions: 1/min: 1130 2nd speed Del.quantity cm3/: 15,0...45,0 1000H.: -Designation mm 3rd speed 1/min: 1100 Del.quantity cm3/: 52,0...58,0 1000H.: (49,0...61,0) : 5,0...5,4 : 1,0...1,4 KF mm MS mm SVS max. mm 1/min: 1050 4th speed Del.quantity cm3/: 68,5...71,5 1000H.: (67,0...73,0) Remarks: : C.D.C. # 391 6923 1/min: 900 cm3/: 70,5...74,5 Heavy-duty fuel-injection pump for 5th speed Del.quantity cm3/: /U,>...4/2 1000H.: (68,5...76,5) DI-engines: only test using timingdevice-travel measuring device with metal jacket 1/min: 750 6th speed Del.quantity cm3/: 73,0...74,0 1000H.: (70,5...76,5) 7th speed 1/min: 500 Del.quantity cm3/: 59,0...67,0 1000H.: (57,0...69,0) Zero delivery (stop): Mech. shutoff: Speed 1/min: 1050 Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: 1/min: 375 Speed ELAB volt: -Del.quantity cm3/: 0,0...3,0 max. 1000H.: -Idle delivery: 1/min: 375 1st speed Del.quantity cm3/: 8,0...14,0 1000H.: (6,0...16,0) 2nd speed 1/min: 450 Del.quantity cm3/: 0,0...4,0 1000H .: -